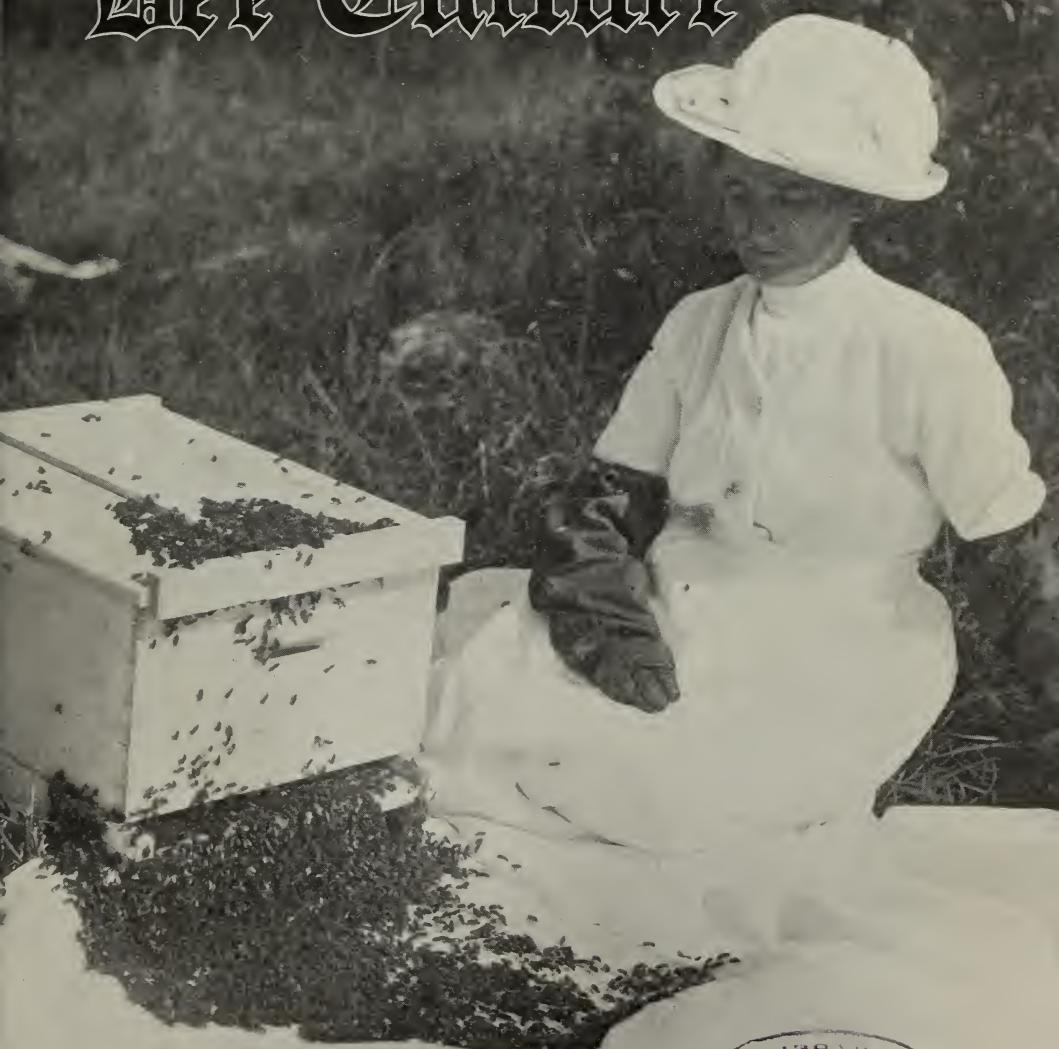


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1913

Gleanings in Bee Culture



VOL. XLI. MAY 1, 1913, NO. 9.

Gleanings in Bee Culture

One Year

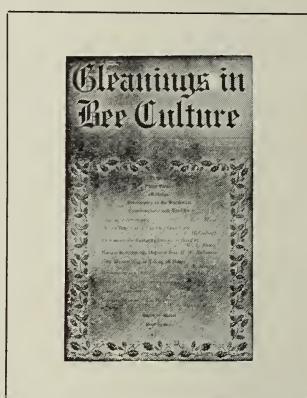
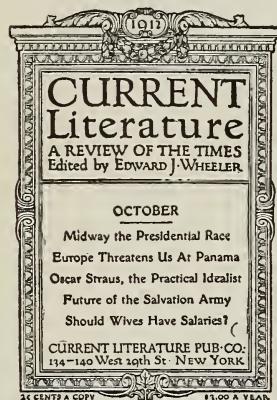
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VOL. XLI.

MAY 1, 1913

NO. 9

Editorial

THE COMB-HONEY CANARD, AGAIN.

A SYNDICATED article that is appearing in a large portion of the daily press of the country, written by Miss Ida M. Tarbell, on the subject of glucose, and telling how it has been used as an adulterant, makes this statement:

"They even manufacture honeycomb fill it with corn syrup."

We wish every one of our subscribers would send in their immediate protest to all papers publishing this, asking such papers to send such protest to Miss Tarbell. We believe she is a candid writer, and desires to tell the truth; but in this case she has made a big blunder. She has implied, also, that the strained honey on the market to-day is nothing but corn syrup, in spite of the fact that the national government, as well as most of our States, has stopped the sale of glucose as honey. Make it plain that there is no such thing as manufactured comb honey, and little or no adulterated liquid honey. Of course we are voicing our own protest direct.

ANOTHER TREATISE ON BEE CULTURE, FROM THE STATE ENTOMOLOGIST OF INDIANA.

THERE lies on our desk a copy of the Fifth Annual Report of the State Entomologist of Indiana. That State has been fortunate in having two entomologists, Mr. Benjamin W. Douglas and now Mr. C. H. Baldwin, both of whom have prepared comprehensive reports on the injurious and useful insects of their State. At the close of the last report appears a brief treatise on bees by D. W. Erbaugh and B. F. Kindig, State foul-brood inspectors. There also appears from the same office a circular of information for beekeepers on the brood diseases of bees, by the Hon. Mason J. Niblack. Mr. N. is an ardent beekeeper—one who has done, perhaps, more than any other man to advance the cause of apiculture in his State. The excellent foul-brood law that has been in force for several years was largely due to his untiring efforts and influence in both Houses of the General Assembly. Indiana beekeepers will no doubt

be able to obtain a copy of either by applying to the State Entomologist, C. H. Baldwin, Indianapolis.

OUR COVER PICTURE.

The picture on our cover for this issue is one sent us by Mrs. S. E. Howard, of Wakefield, Mass., whose article adorned the pages of our Women's Number, the March 1st issue. Mrs. Howard is an expert, who, having made a success with beekeeping, has been furnishing a number of the popular magazines with illustrated articles showing how and why she succeeds. These articles are refreshing in that they are written by one who is familiar with nearly every phase of beekeeping. A very large proportion of the literature in the popular press in regard to bees is unorthodox in some respects. By this we mean that it is likely to contain some reference or some statement which causes an experienced beekeeper to smile. Mrs. Howard's articles do not contain extravagant claims of enormous profits, nor are they such as to cause any inexperienced person not fitted for beekeeping to plunge wildly into the business without giving a thought to any thing aside from the spending of a lot of time and money.

The view shows the hiving of a swarm. The cluster of bees has just been shaken on to the sheet before the entrance of the new hive, and the bees have begun marching in. This is a sight that never fails to excite admiration or wonder on the part of the onlooker, as the bees when they once start go trooping in, for all the world like a flock of sheep.

THE WESTERN HONEYBEE.

VOL. I. No. 1 of the new bee-journal has come to hand. It announces on the front page that it "is not a competitor nor a money-maker," but is designed to "fill a long-felt want." It is published by the California State Beekeepers' Association, from news furnished by the beemen. At present it is edited by G. L. Emerson, a beekeeper owning and taking care of from

1200 to 1600 colonies. There is a distinctly Western and a professional flavor in the new publication, and the first issue gives evidence that it will indeed fill a "long-felt want." The articles are by a number of prominent beekeepers—men well known through the bee-journals; and, besides, there are contributors who count their colonies by the thousand.

We are glad that its promoters feel that it is not a "competitor." This is a broad, broad world, and a big, big country. California is a great deal larger than some countries, and the second largest State in the Union. We see no reason why the bee-keepers of that State should not be able to maintain a journal that will be a credit to them as well as a help. It will build up the industry, and so far from being a competitor it will be an aid to all bee journals.

It will be of immense worth in securing a foul-brood law that will mean something in California. There is much more it can and will do for not only the Association but for the general advancement of bee-keeping within the State and out of it. GLEANINGS is glad to welcome it.

THE BEHAVIOR OF THE HONEYBEE IN POLLEN COLLECTING.

IN our issue for March 1, page 139, we gave a brief review of a bulletin from the Bureau of Entomology, No. 161, by Dr. D. B. Casteel, on the subject of the manipulation of the wax scales of the honeybee. This time we have the pleasure of referring to another bulletin by the same author, entitled "The Behavior of the Honeybee in Pollen Collecting." This, like the other, is extremely interesting, because it opens up a field hitherto unexplored by any one except F. L. Sladen, now Assistant Entomologist at Ottawa, Canada. Much has been written on the value of the honeybee in pollinating fruit-blossoms, clovers, and buckwheat; but the intricate process by which the bee prepares this pollen and deposits it in its pollen-basket, if we are correct, has not been accurately described until Sladen and Casteel gave it to the public.

The matter of *how* the bee takes its pollen from the blossom and stores it in its pollen-baskets, from a scientific point of view, at least is exceedingly interesting; and it has its practical side because it helps to prove that bees perform an almost indispensable service in pollinating blossoms. If any one has ever doubted this proposition he could doubt no longer after seeing how elaborate and perfect are the appliances, the working tools, so to speak, in pos-

session of our common honeybees as well as bumblebees, for gathering and storing pollen. That is to say, if the bee is perfectly equipped for doing this work it certainly must do it.

Very few people have had the time and patience to follow the intricate process of the bees in pollen-gathering from start to finish. In our younger days we tried to discover just how the bees did it; but the performance was so rapid that nothing short of an instantaneous photograph could have caught it. In this connection it should be stated that Dr. Casteel had, of course, all the modern appliances that the government could furnish to aid him in this investigation, and he used them. He called in the services of an expert chemist from the Bureau of Chemistry to determine the nature of the liquid that holds the pollen together; he consulted all the works that bore in the least on the subject; but apparently Mr. Sladen was the only man who came anywhere near telling exactly how pollen is put into the pollen-baskets.

The bee's working tools consist of spines and hairs on its legs; of a long hairy tongue, of mandibles, and fuzz, or hair, on the body, and of pollen-baskets which, so far from being a basket—well, it does not look like any thing except a bee's hind leg. The average person, if he will examine it carefully with a microscope, will conclude that the pollen-basket is the most unlikely place in which to store a lump of bee-bread; but it stores it in great big chunks just the same.

The manner in which the bee gathers pollen varies according to the flowers on which it is working. Sometimes the dust is collected on the hairs of the body as well as on all the legs, antennæ, and head. At other times, only the fore legs, where the flowers are very small, in connection with the tongue, seem to be concerned in the process. On the fore legs is a very interesting device called the antennæ-cleaner, which is used for removing pollen from the antennæ. On the middle legs there is a peculiar kind of spur that is used for kicking pollen out of the baskets on arrival at the combs. On the hind legs are pollen-combs, pollen-baskets, a sort of pincers, or squeezers, consisting of a pecten, and auricle. These devices all come into play at the proper instant, as we shall see. In some cases the bees fairly wallow in the pollen dust of the large flowers. On taking wing they proceed to clean themselves through the agency of the special tools provided by the legs, consisting of hairs, pollen-combs, antennæ, claws, all of which,

while the bee is flying, may be engaged in the process of directly and indirectly transferring the pollen from some part of the bee's anatomy to the pollen-basket. "Busy as a Bee," for the bee is busy not only while in the flower, but while it is on the wing. It can not afford to waste valuable time merely in flying, so it keeps its legs busy in making pollen gathered on its body and legs) into a bee-bread, or, more exactly, a pollen paste consisting of honey and pollen grains, making little patties of dough.

The process of following the transference of pollen from the mouth parts to the middle legs, and even to the pollen combs of the hind legs, is not so difficult. Most of the authors who have attempted to describe it have been fairly accurate; but authorities have differed widely as to how the pollen was transferred from the pollen combs on the hind legs to the pollen-baskets; and no one seems to have discovered the correct method until Sladen and Casteel, each independently of the other, dug it out.

Those who have studied the anatomy of the bee will remember that, on the hind pair of legs, there seems to be between the joints a big pair of pincers or jaws. These pincers or jaws are opened when the legs are flexed, and closed when they are straightened out. Some have supposed that the function of these was for the purpose of masticating or working wax; others, that they were used for hanging hold of each other while hanging in the swarm. There have been all kinds of guesses, but they have been wild. Sladen and Casteel have proved beyond a question that they are used for the purpose of pressing the mass of loose pollen and honey, and at the same time forcing it up under pressure into the pollen-basket on the outside of the leg. The pollen combs of the hind legs receive the pollen from the middle legs, and from the under side of the body of the bee. The pecten spurs or the upper part of the pincers catch or gather the pollen from the pollen combs on the opposite hind leg. The jaws close, squeezing the mass so that it is forced under pressure to the opposite side of the leg up into the pollen-basket, just about as you would squeeze putty out from between the ends of the fingers. These little masses of pollen, or mouthfuls, so to speak, are gradually forced upward, pushing the general mass higher up in the basket. The process is somewhat similar to the method of putting fuel in one of our house furnaces. The coal is pushed up from the bottom under the fire-pot, shovelful by shovelful, so to speak, until the fire-pot is filled

full. In the same way the bee fills its pollen-basket from beneath; and this filling continues until the lump of pollen is pressed out in all directions, crowding against the hairs or spines of the pollen-basket, and sometimes away past them; and as the mass is wet with honey it sticks to whatever it comes in contact. The old popular belief was that the middle legs, in some way unexplained, put the pollen in the pollen-basket from the outside. While these middle legs do reach back over the pollen mass in the baskets, the purpose of the movement is evidently to determine whether the lump is holding its position.

The whole process as described by Sladen and Casteel is exceedingly interesting; and it is of more value because each worked out the problem without the knowledge of what the other was doing. It is a marvel that either should have discovered the process; but when it is once explained it seems so clear that there is no room for doubt.

There has been some speculation as to what is used by the bees in moistening the pollen. Some have thought that it was saliva; but the majority have held that it was honey. Dr. Casteel has proved that honey is the agent, for chemical analysis shows that, beyond a doubt. Honey that is obtained from the mouth parts is transferred to the fore legs, and sometimes to the middle legs, and by the latter to the hind legs, or pollen-combs, that catch and receive the dry pollen. This is subsequently worked over and transferred to the pair of pincers already mentioned, before its entrance into the pollen-baskets as just explained.

This interesting bulletin can be secured from the Superintendent of Documents, Government Printing-office, calling for circular 121, and inclosing five cents. Do not send stamps, as the Government does not accept them. It would be well to get in your order early, as the edition of Dr. Casteel's former bulletin, No. 161, on "The Manipulation of the Wax Scales of the Honeybee," was entirely exhausted in a short time. We are pleased to note this, because we want the authorities at Washington to know that there is a big demand for any thing on the subject of bees, and the more of this kind of stuff they can give us, the better.

For convenience in sending for these bulletins the Department will send twenty coupons for a dollar, each of which is good for five cents. Buyers of public documents will find the use of these coupons the most convenient and the safest way of remitting the amount of their purchases.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

DESTROYING the capped cells to prevent swarming is advocated, p. 212. But would not that require very close watching? for are we not told that a colony swarms when the first cell is capped?

MR. EDITOR, you say, p. 246, that parcel-post packages of honey can't go *outside* of the mail-sacks. May be they can't, but they do. At least the case of honey I sent to Chicago went that way. Matter of "locality," eh?

TIME was, and not a hundred years ago, when a beekeeper's success was measured by the number of swarms that issued. Now there is a niche in the hall of fame awaiting the man who will give us a profitable way to prevent swarming in all cases.

How nice it would be if you could just divide a colony into two, three, or more parts without having most of the bees go back to the old stand! Well, you can do that very thing if you take a colony from the home apiary to an out-apiary. Then you can bring another colony from the out-apiary and divide it up in the home apiary. Of course, if you have no out-apiary you can shut up the bees for about three days, or you can close the entrance with green leaves or grass and let the bees dig their way out. [You are right.—Ed.]

J. L. BYER, your head's level in that talk about syrup vs. honey, p. 253; and I venture to say that in five years you'll go still further and say that, even for wintering, syrup does not equal A1 honey. [What do you mean here, doctor? Do you mean that an A1 honey is superior, irrespective of quantity, to sugar syrup? Perhaps you are right, but we would suppose that you will have not only Mr. Byer but the whole fraternity against you. However, we all agree with Mr. Byer that a pound of sugar syrup in the feeder will not last as long as a pound of honey sealed in combs.—Ed.]

FOR half a century there is no one thing in beekeeping I have fought more bitterly and persistently than the swarming nuisance. I don't believe any plan is known that will *entirely* prevent all swarming if colonies are kept strong. But you can come so near to it that it will hardly pay to watch for the few swarms that will run away. You can work for extracted honey, and give abundance—not plenty, but *abundance*—of room for the queen, and also for the surplus, giving much ventilation at each story. Or, especially if working for sections, you can exchange the old queen for a young

one at the beginning of the swarming season.

G. W. DEMAREE, a Kentucky beekeeper, some years ago gave a plan for prevention of swarming that is simple, and has proved successful in the hands of many who work for extracted honey. When swarming-time comes, put the queen in the lower story with one frame containing a little brood, and fill up the hive with combs or foundation. Over this put an excluder, and over the excluder a second story with the rest of the brood. Ten days later kill cells in upper story. These upper combs will now become extracting-combs. [The secret of this lies in giving the queen egg-laying room. The principle is correct.—Ed.]

WHEN running for extracted honey it helps against swarming to have the stories "stuttered;" the second story shoved forward to make ventilation at the back, the third story shoved backward to make ventilation at front, and so on alternately. Even for comb honey I like ventilation at back between hive and first super. [This plan is all right when working with ordinary Italians or common hybrids—that is, a cross between Italians and black bees. We tried it out very thoroughly last summer with an apiary of Carniolans. While it checked their swarming it did not stop it. In fact, we do not believe there is any device or method known that will stop Carniolans from swarming if they once get started. This one Carniolan apiary gave us more trouble from swarming than all the rest of our apiaries together.—Ed.]

I ARISE, reluctantly, to say to beginners who think of increasing by the Alexander plan as given in A B C and X Y Z that I don't believe there's one locality in a hundred where the plan will pan out as there represented. In my locality it would make the increase all right, but it would make a bad dent in my honey crop instead of nearly doubling it. If your bees have a reliable buckwheat harvest of thousands of acres, and you want at least part of your crop extracted, then go ahead. [You are probably correct for your locality; but you will remember that Mr. Alexander places strong emphasis on stimulative feeding. And you will remember that his main honey crop did not come on till about the first of August or later; so, therefore, what might work with him might be a failure with you, where your honey-flow comes on about the first or middle of June, and closes about July 1.—Ed.]

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

I read this headline in the issue for April 1: "Painting queens so that they may be quickly found." A little more training of the eye will help to a great extent. I doubt whether the painting idea makes very much headway.

* * *

Mr. R. M. Spencer says, April 1, p. 209, "We use a method of preventing robbing during this early spring work by going over the hives so fast that robbers can not get a chance." I guess that is "going some," all right.

* * *

California showed up well in the April 1st issue. Besides the cover picture, we were represented by several good articles. Those honey-tanks shown on the cover are about as large as are ever used, and not very often do we see more than one at an apiary, even in this land of floods and drouths in the honey-flows.

* * *

Did you ever stop to consider the amount of excitement a swarm of bees will cause? I once saw an entire family, with most of the tin portion of the kitchen utensils going across the fields and meadows in a merry chase after a swarm, but they were not successful in stopping it. A hive once sat in the back yard of a neighbor year after year, and the bees were hardly noticed until they swarmed out; then great excitement was started at once, and all hands were called to hive them quick.

* * *

A CORRECTION.

I am in receipt of a letter from Mr. F. C. Pellett, State Bee Inspector of Iowa, in which he calls my attention to the fact that I have misstated the report of the Iowa State Beekeepers' Association, on which I made comment in the April 1st issue. Mr. Pellett says, "The joke is on you; put on your glasses, and read the report of the Iowa convention again." Well, I read the report, and I humbly beg the pardon of the Iowa beekeepers; but in justice to myself I think Mr. Pellett should have recommended an optician, inasmuch as I have not as yet begun the use of glasses. It is just possible I may be in need of them. Any way, I must admit that I did not observe as closely as I should have done the clause relating to being accompanied by a certificate of health signed by some duly authorized Government or State inspector.

PROSPECTS FOR HONEY.

We are nearing the end of the second week of April with little if any better prospects for a honey crop than at the same date last season. So far we have had a very light season's rainfall, and at this date it seems probable that our rains are over for the season. We may expect some showers during the next four weeks; but any great amount of rain is only possible. The button sage in this locality, no matter how much it may rain, is practically out of consideration for the season. It is badly frozen, as I have before stated. Much of it will not put out a bloom shoot, and some not even a green leaf. The orange-trees are just beginning to bloom, with bees on an average in better condition than last season, so we may reasonably expect some honey from that source; but from the wild flora there is little in prospect. It seems probable that the season will be finished with a total of less than last year's crop, and the price ranging around 8 cts. Good rains would, no doubt, be of some aid, but it seems out of reason to expect any great amount of honey after the past six weeks of practically dry weather.

* * *

FIRST ISSUE OF THE WESTERN HONEYBEE.

The first issue of *The Western Honeybee* is out. I believe it is of sufficient merit to recommend itself to the western beekeeper. Like all work undertaken by the association, it must be supported first and most loyally by association members, who, with their best efforts, can help gain the support of the western beekeepers as well as many in the East, for there are many in the East who will be subscribers for the sake of knowledge. The more bright journals we have, the greater will be our opportunity to profit by the ideas we get one from the other. It is my wish that *The Western Honeybee* may take its place in the front rank of bee journals of the country, and I shall lend an effort in making it a success, though I expect to continue my work in these columns as long as I can feel that I am aiding the beekeepers of my State or elsewhere, or until the editors tell me that my services can be dispensed with. I have been editing this department for nearly two years; and while I do not feel that I should grab in with both hands and take more than my share of credit, I do have a feeling that I have done something to interest the California beekeeper and keep alive an interest in our State affairs.

Beekeeping Among the Rockies

WESLEY FOSTER, Boulder, Col.

Mr. Chadwick says, p. 47, Jan. 15, that Colorado claims 27,000 colonies of bees. I wonder where he got that information. The 1910 census gives Colorado 70,000, and that is very probably below the figure, as bees in towns were not counted. I do not care to guess, but I am of the opinion that, if every hive containing bees were counted, the number would be over 100,000. Mesa County has over 14,000 colonies, according to Mr. Harkleroad, the inspector; and of this number over 11,000 were inspected during 1912.

California is, without doubt, a much heavier honey-producer than Colorado. We are willing to grant that; but we have some of the best beekeepers to be found anywhere, and the homes of our beemen are a credit to the State. I have a collection of photos that attest it, and some of these days I am going to show them. The homes of a nation are its stronghold. The past fall, Mrs. Foster took nearly a thousand-mile trip with me, and she visited in the homes of beekeepers for about a month. She formerly harbored the idea that beemen were mostly eccentric, a little off in the upper story, so to speak. When she reached home she had changed her mind, and expressed herself to the effect that beemen know how to share the conveniences of modern life with their wives, and how to enjoy life. They struck her as being a live, alert class with a business requiring training and mental alertness. So there you have the opinion of a college girl, newspaper woman, etc., who happens now to be Mrs. Foster.

* * *

ALFALFA NOT BEING CUT AS EARLY AS FORMERLY.

While on the Colorado Agricultural College demonstration train I had several very enjoyable visits with Mr. P. K. Blinn, alfalfa specialist for the Colorado Experiment Station at Rocky Ford. There is no man in the United States who knows more about alfalfa than Mr. Blinn. He has experimental plots of many varieties of alfalfa, testing seed production. The nectar production in relation to seed production is one of interest to him, and some tests are contemplated to find out, if possible, whether the heavy seeding alfalfa is also heavy in nectar production. The Grimm alfalfa is in the lead at present, as regards tonnage and hardiness. It is much more profuse in its blooming than any other varieties—all colors of bloom from white, pink, blue, and purple shades. If, as is likely, it is as heavy

a honey-producer as it is a blooming crop it will be a winner for the beeman. And here is another point—it begins blooming before its gets its growth. The farmers will not cut it until after it has bloomed for some time. The seed is from fifty cents to a dollar a pound as yet; but the price will come down when it is produced in greater quantities. Mr. Blinn also brings this good news to the beemen—that there is a change of opinion regarding the cutting of alfalfa before it blooms. Alfalfa is not being cut as early as it was five years ago.

* * *

SEASON PROSPECTS.

Early in March, breeding was going on freely in normal colonies, only the weakest ones being without brood. But March went out like a lion, and considerable brood was chilled. Many colonies will need feeding in northern Colorado before the honey-flow begins. Better lay in a supply of sugar. It is cheaper now, March 26, than it has been for a long time—\$5.00 per hundred, and less for beet sugar.

A snowfall of 19½ inches fell March 25th, nearly half the whole winter's fall. There is an abundance of snow in the mountains, and the bees are in fine order. The only thing we fear is the late frost that blights the alfalfa and destroys the nectar secretion of the first growth, and lessens the secretion of the second and third bloom.

The beekeeper in the exclusive alfalfa districts has troubles altogether different from those of the man in the fruit areas. The alfalfa-district man is annoyed by spring winds that retard early breeding. There is also a very marked lack of early pollen. These conditions obtain in the Arkansas Valley in Eastern Colorado, and the Platte Valley in Northern Colorado. Some beemen move their bees near the river in the valley for the winter and spring, moving back to the alfalfa fields about the time for the bloom on the alfalfa to open.

In the fruit districts bees build up with remarkable rapidity, and swarm and swarm just as they do where they wish for a non-swarming strain of bees. It is easy to keep up one's numbers in the fruit district if you are not wiped out by spraying. Which location will you take? The beemen feel that they are between the devil and the deep sea. Some say that they believe they will move back east and live with wife's folks—take up cellar or clamp wintering, and put up with cold winters, and floods in the spring.

Conversations with Doolittle

At Borodino, New York.

ARE DRONES A NECESSITY IN NATURAL SWARMING?

I am told that drones are necessary when the bees make their plans for natural swarming, for no swarm will ever issue unless there are mature drones or drones in the brood, on the principle that the parent colony would become extinct from the leaving of the mother-queen with no provision made for the mating of the young queens later. This would be especially true with all isolated colonies; and it is calculated that the bees of each colony consider theirs in such a light, no matter how many other colonies any apiarist may mass together. Now, if this is a fact, would it not be an easy matter to do away entirely with natural swarming by excluding all drone comb from all the colonies in any apiary?

The exclusion of drones from colonies for the prevention of swarming is not a new idea. It does seem reasonable at first that no colony would swarm unless there were a reasonable prospect for the perpetuation of the old colony from the young queens, always left behind in the brood form, becoming fertile later. But so far as I know it has never been announced that successful non-swarming has ever been obtained by excluding brood comb. Several have announced, during the past quarter of a century, that drones, being a necessity to the permanence of the colony, a logical deduction would be that their entire absence would delay the preparations for swarming that are usual to all parent colonies. It has been assumed that the rearing of drones is the first preparation which leads to the building of queen-cells, which, when sealed, constitute the completed preparations.

While on this subject it might not be amiss to notice some other vital principles which induce swarming, and which will afford us a more intelligent understanding of it. As long ago as 1852 Mr. Moses Quinby named three causes which induce swarming, and to-day they are recognized as the prime factors. As I look back over the years which have passed since then I can not refrain from referring to the wonderful accuracy of most of Mr. Quinby's investigations. Even the limelight of this twentieth century has cast a shadow on very little if any of the investigations which he gave to the world, and the larger part of such were carried on when a box hive was the known palace of a colony of bees. His three causes or factors are these: "A crowded hive, a large brood, and a good flow of nectar." These are usually sufficient to induce swarming.

Another factor bearing on these is that of temperature, which will hasten or retard the preparation just in proportion to the

heat or cold. What is known as the swarming fever or swarming impulse is a strong factor when the other conditions are combined. These conditions being absent, no amount of drones would cause swarming; and with their presence I have known colonies to swarm without a single drone or even any prospect of any.

This no-drone theory is not new, as I hinted at in the start. At the time it was agitated, fifteen or twenty years ago, in order to test this matter as well as another still more strongly advocated as a fact, that no colony would swarm with any queen of the current season's rearing. I made several colonies as follows: A nucleus was formed by taking the queen away from a weak colony of bees, and confining the bees of this weak colony on two frames of brood and two of honey, the brood being between the two of honey. This nucleus was given a ripe queen-cell. This gave a laying queen in from ten to twelve days, at which time there would be bees enough to care for a hive full of combs, as the larger part of the brood would have emerged if combs of nearly all sealed brood had been given at the time the old queen was taken away. When the young queen had practically filled with eggs the combs from which the brood had emerged, six combs of all worker cells, filled as nearly as was possible with sealed brood, were given to such a nucleus. Three days later a super of sections filled with thin foundation was given, when the no-drone and current-year-queen talk said such made colonies would not swarm that year. In about ten days these hives became filled to overflowing with bees from the sealed brood given, and the bees were making a start in the sections, as there was a fairly good yield of nectar from the fields.

Some days later, when I was becoming enthused with this way of making colonies, which would be non-swarmers for at least one season, out came a swarm of monstrous size, the queen coming out with the last half of the bees in regular prime-swarm fashion. A careful looking-over of the combs which the hive contained gave no evidence of drones in any form whatever; but there were queen-cells with eggs and young larvae in them. This was a damper on my enthusiasm, and the whole theory was finally spoiled by every one of the colonies I had made in this way swarming that year, with a single exception.

Those who still thought that there was
Continued on page 288.

Notes from Canada

J. L. BYER, Mt. Joy, Ont.

Wherever bees here in Ontario had enough good stores last fall, they wintered in fine condition. Many beekeepers report heavy consumption of stores, and attribute it to a mild January. Clover is looking well at this date (April 4); and as there is an abundance of it this season, naturally we are hoping for a good crop of honey.

* * *

Talk about pluck, I think that picture on page 155, March 1, where a transferring operation is in progress, shows that virtue personified. How many women would want to be working like that with those thousands of bees crawling all over the ground, and over herself, as seems to be the case. Transferring will always be necessary, I suppose, to a certain extent; but at best it is a mussy job when done by the old-time methods. The times are rare when one can not transfer by simply putting the new hive on top of the box or other receptacle, allowing the queen to go above and occupy the good combs or foundation. As soon as she is above, slip a queen-excluder between the two bodies, and then in 21 days shake off the bees of the lower hive, doing as you wish with the combs, now empty of brood.

* * *

The spraying question is a live issue in Ontario again, especially in localities where fruit is grown extensively. Last week I was in the counties of Northumberland and Durham on a short Institute trip, and at different places I heard of owners of spraying outfits who said that they were going to spray right along, and, if necessary, pay any fines imposed. They said that the outfit is worth at least \$15.00 a day to them; and as the fine is very small, they can afford to pay it if necessary and keep right on at work. To make matters worse, some good fruit-men are not as sure as formerly that the spraying in full bloom injures the blossoms; and with a big acreage to cover they say that, if it were not for the bees, they would spray right in full bloom. It is a difficult question to solve; but there is no question that the best-informed men in the fruit industry are opposed to this spraying in full bloom, even if it were not detrimental to the blossoms, as they realize that the bees are necessary in order to insure best results in the way of fertilization. Something will have to be done in the near future, for this spring the chances are that there will be considerable friction in some localities; and if the law we have is to be

enforced, certainly amendments must be made that will make the fine more than nominal.

* * *

QUEENS MATE QUITE CLOSE TO THEIR OWN HIVES.

Mr. John McKinnon, writing in the *Canadian Bee Journal*, says that his Italian bees did some robbing from hives four miles distant, this last season, and also that some black queens six miles away were mated to Italian drones from his apiary. While I would not contradict these statements, yet it would need some pretty positive proofs to convince me that he is correct. For years, much buckwheat was grown within four miles of our home apiary; and while bees in the buckwheat section stored more than enough for winter each season, not once was a drop of buckwheat honey noticed in our yard. In said yard there were Italians, Carniolans, and blacks, so no "race" claims can enter into the matter as an explanation. As to distant mating, I can not speak so positively; yet all my observations along that line certainly go to show that the great majority of queens are mated quite close to the hives from which they issue. Especially is this so in so far as black bees are concerned; and usually with an equal number of black and Italian drones flying, the black chaps will come out ahead in the race, as any one who has bred Italian queens in a mixed apiary will testify to from sad experience.

Conversations with Doolittle—continued from p. 287. something in the no-drone theory, still clung to the belief that swarming can be prevented that way, and so I tried many plans looking toward the prevention of a single drone being reared in any hive in their apiaries, they considering the prevention of the rearing of drones the greatest obstacle in the way, for it is the natural instinct of a strong colony of bees to rear a few drones when the colony becomes prosperous enough in early spring. It was found out that frames of all worker comb, or those of foundation having that size of cell, were not proof against drones, as some anxious colonies would get in a few cells in the corners of the frames, between the frames and some part of the hive; or, if thwarted in all these ways, they would even cut down a little patch of worker comb and build drone comb; or the queen would lay drone eggs in worker cells.

General Correspondence

THE SWARMING PROBLEM IN THE NORTH

Making Increase; Making up Winter Losses

BY E. D. TOWNSEND

The prevention of swarming when working bees for either comb or extracted honey is a matter which should be given attention earlier in the season than many suppose. It is a case where the old adage, "An ounce of prevention is worth a pound of cure," applies forcibly; for if one can get his bees strong, and still keep them free from the swarming fever until the opening of the clover or raspberry flow in June, with rational handling during the honey-flow, but little swarming should result.

A MILD SYMPTOM OF THE SWARMING FEVER.

One indication of the swarming fever is the early rearing of drones in spring. This symptom is not of a very severe type, as it will be noted that swarms with but a moderate number of bees rear drones the same as the more powerful colonies during the spring months. At this time the swarming fever is so mild that subsequent events or conditions will determine whether the colony will swarm or not during the season.

A CRITICAL PERIOD IN SWARM PREVENTION.

In the North the period of three or four weeks previous to the opening of the clover or raspberry flow of honey is a critical period—the time of our main surplus-honey flow. We have practiced for years the protecting of our bees either out of doors, in packed or chaff hives, or papering those wintered in the cellar, until after the danger of freezing nights was over, which in this location is from May 20 to 25.

We have a system of uniting our very weak colonies with our very best ones, setting one above the other, without excluder. To digress still further I will say that, at this uniting, stores are equalized—i. e., a weak colony containing considerable honey is carried and set either under or over (as my judgment suggests) a colony containing a normal quantity of bees, but short of stores, or *vice versa*. There are still some colonies not very populous that are worth saving. It will pay to protect these in some way during the cold period of spring.

How to carry the populous colonies of bees through the period of three or four weeks previous to the opening of the main honey-flow without their acquiring the swarming fever is the proposition in swarm control during the season. Swarming-fever prevention at this period is secured by giv-

ing the more populous colonies *an abundance of comb room* so that they will never feel the least bit cramped for room. This is the key to swarm prevention previous to the opening of the honey-flow. More and more each year we are practicing giving a set of empty combs to each good colony some little time previous to the opening of our main flow of honey in June.

We start out by giving sets of brood-combs where swarms have died out, or some where weak swarms were united the previous fall. As we never extract from these brood-combs, they usually contain considerable honey and bee-bread, which is valuable at this time.

EACH COLONY CARED FOR ACCORDING TO ITS INDIVIDUAL NEEDS.

If a colony is found in May with a good stock of bees, but which for some reason or other is short of stores to carry the bees over to the opening of the main honey-flow, we place, in this extra set of combs we are giving them, honey to supply their wants. Those stories of brood-combs which we give early are placed under the colony, while those given later in the season are placed above a queen-excluder (on top), for they are our regular extracting-combs.

While we strive to have our covers fit reasonably tight, thus preventing any considerable direct draft through the colony, the summer entrance should be used. In most cases this large entrance, coupled with a full ten-frame set of combs underneath, will prevent the swarming fever. A colony of bees free from the swarming fever is worth two colonies that are "sulking" at the opening of the surplus flow in June on account of the swarming fever.

The handling of the surplus receptacle during the honey-flow is worked on the plan of giving plenty of room during the first three-fifths of the season, or allowing the remaining two-fifths of the honey-flow for finishing.

HOW WE MAKE UP OUR WINTER LOSSES; ALSO HOW WE MAKE OUR INCREASE OF COLONIES.

After managing our bees to the best of our ability, without going to the trouble of shifting combs about from colony to colony, some few colonies will swarm unless we utilize them for increase. As our bees are mostly in outyards, where a part of them are left without a keeper each day during the season, on account of there being more yards than help, if the bees were allowed to cast many swarms a considerable loss would occur.

As I have already mentioned, the extra strong colonies early in the season were given an extra story under, containing a weak colony. Others were given sets of brood-combs containing more or less honey according to their needs, while still others were given sets of extracting-combs above an excluder. In case of the colonies containing two sets of brood-combs, or any divisions, for that matter, where sets of combs are available, we proceed as follows in increasing our number of colonies: The upper story is usually the one containing the main portion of the brood and honey; but it often happens that the queen has begun to utilize the lower story by the opening of the clover flow of honey. In case young brood is found in the lower story, all we have to do is to see that the queen is in the lower portion, put on an excluder, then a set of extracting combs, and, on top of all, the set of old brood and honey. In eight days the brood will be all capped over in the upper (queenless) apartment, and in two more days ripe queen-cells will be found. About one colony in ten will not build cells in their queenless brood above; but ample cells and to spare will be found in the other nine colonies to make up any deficiency in the tenth colony.

At the time of making the divisions, if cells are found, as in preparation for swarming, no notice is made of them unless there will likely be a virgin hatched before our next trip to the yard to finish up the increase ten days later. In this case a queen-excluder is placed under the body containing the cells, so as to be sure that the young queen will be in the very set wanted, or, in other words, not be allowed to roam over two sets of combs, making it necessary to hunt her up on the tenth day. On the tenth day the set of brood, now all sealed, containing either cells or a virgin, as the case may be, is given a bottom-board and cover, and is then placed upon a new stand and allowed to build up for winter.

If it is desired to make more increase than this one division, the newly made colonies can be divided in the middle, giving each half an equal portion of brood and honey, and seeing that each half gets a comb of brood containing one of the best queen-cells. Where the brood is divided in the middle, making two colonies out of the one set of brood, as set forth above, empty combs, or combs containing honey, should be used to make up the number necessary to fill out the hives, as foundation will not work so well in this place. With such small colonies, especially where there is no fall flow of honey, feeding will probably have

to be resorted to for winter stores. The above is our plan for making up winter loss where combs are available.

For increase, or any occasion where no combs are at hand, full sheets of wired foundation are used. The queen is found, and the card of brood, queen and all, is set in a hive body, and the remaining space filled in with frames containing foundation. The old hive is now set to one side, and the body containing the queen is set in its place on the old bottom-board. An excluder is now placed on top, then a set of extracting-combs, and the original hive placed on top of all for ten days; when it is given a permanent stand of its own, the same as when drawn combs were used.

This system of making up winter loss and increase is particularly adapted to out-yard work, as two visits is all that is necessary to do all of the work.

Northstar, Michigan.

THE SWARMING PROBLEM IN THE SOUTH

The Most Economical Way to Make Increase

BY J. J. WILDER

In this article I shall give some of my plans briefly; but allow me to say that no great crop of honey can be harvested here without close watch over the bees, and more or less manipulation of supers and frames. The extra amount required to control increase, however, is not so great.

No beekeeper should undertake these two great steps in our industry until he is familiar with the sources of honey within reach of his bees. He is then far better qualified to take up the work.

SWARM PREVENTION.

During a slow glimmering honey-flow, such as we have in the South during the summer or fall of the year, bees will not acquire the swarming fever if they are kept supplied with plenty of storing room. But during the spring months they seem to be naturally inclined to swarm, and will do so on the least provocation.

There is another fact noticeable about swarming. If, during the swarming season, there should happen to be one or more days of bad weather when the bees are confined to their hives, they seem to spend this time of leisure in preparing to swarm, and no doubt the greatest impulse for swarming starts under such conditions. In my location I may expect swarming to begin the first week in April. My first round in examining bees is made in February, and the second one during the first and second week

in March. On this round, all very strong colonies are elevated from their bottom-boards by means of two $\frac{7}{8}$ -inch strips cut 20 inches long, one placed under each side. This gives good ventilation from end to end, and allows the bees a good clustering-place about the bottom of the frames, which will protect the brood during cool nights, and allow plenty of ventilation during sultry nights, at which time they will most likely acquire the swarming impulse.

My brood-chamber consists of one eight-frame hive-body and a shallow extracting-super on top containing ready-built combs which are left on over winter, and which contain more or less honey; and if the queen is occupying this super of combs, another super is set on top, which gives the queen additional room. This super can be taken from some weaker colony, or there are usually some extra ones left on in the fall at each apiary for this purpose.

The third and fourth weeks in March another tour of inspection is made, and more strong colonies are treated in the same manner, and the weaker ones left for attention on the next round. The first ones thus treated are given a storing super; for by this time the eve of the honey-flow is at hand.

My third round is made during the first and second weeks in April, and at this time all colonies are treated like the first strong ones. By this time a little nectar is coming in, and the strongest ones are examined in order to see whether they have started queen-cells. This examination is made by tipping up the supers next to the hive-body enough to see well over the combs and also down through the combs below; and if any queen-cells are started they are torn out; but if not, the super is let back in position. If any work has been done in the storing super, another one is put on.

The fourth round is made the third week in April, and all colonies are examined for queen-cells as was done on the previous visit. By this time the honey-flow is in progress; and wherever a colony has started work in the storing supers, another super is added. Instead of placing it on top it is put under the other storing supers next to the brood-nest.

The fifth trip is made the fourth week in April, when all colonies are again looked over for queen-cells, as on previous visits, and storing room is added as may be necessary, allowing no honey to be finished next to the brood. By this time the bees are working in several supers, and there is little if any finished honey.

Another round is made a week later, or the first week in May, and all apiaries are worked as on the previous visit. The honey-flow is now at its best, and there is some finished honey which can be removed, and the packers started to work. About two weeks hence the honey-flow will decrease.

The second week in May another trip is made, and a few of the colonies in each apiary which have made the greatest effort to swarm are looked over; and if no sign of swarming appears we do not give the apiaries a general working, but add more storing room where it is needed. Then no more manipulation is necessary, for the bees have lost all desire to swarm, and will finish filling the supers.

INCREASE.

I make as much increase at the home apiaries as possible, for it is more convenient there, but a lot more of general increase is made at the out-apiaries. This increase is usually made at the time of our second or third round, and it requires but little extra time when every thing is in readiness.

In early spring, when we find a colony building queen-cells it is divided into two equal parts, and the queenless half is left on the old stand (if we happen to find the queen; and if not, both divisions are given combs containing queen-cells). Then the open space in the hive-bodies and supers is fitted in with ready-built combs, or frames containing full sheets of foundation. On our next rounds the divisions are examined, and the weaker ones are replenished with frames of sealed brood from colonies that can best spare it, and are given storing room as they need it. This cures such colonies of the swarming fever for the season; and as the divisions were made early, these colonies will store considerable surplus honey before the end of the spring honey-flow. Then more general increase is made near the close of the summer or fall honey-flow; but at this time there is no natural inclination to swarm, and nine or ten days after the divisions are made (which is done as in spring) we make a special round and see that all queenless divisions have at least one good queen-cell. At the close of the season, when we put the bees up for winter, if any colony is queenless we unite it with a weaker colony. Only the strongest colonies are divided, and those that are heaviest in stores, so that no feeding will be necessary. Thus our general increase is made from our very best stock. The increase at the home yards is made in like manner by dividing up the strongest colonies from time to time throughout the season; but here we give the queenless divi-

sions ripe queen-cells from our very best stocks; and when there is no honey-flow on we resort to outdoor feeding; and thus our off grades of honey are utilized. All queens are given all the room they can occupy by inserting empty combs in their nest; and as soon as one well occupies six or eight combs the colony is again equally divided, and so on throughout the season. Such increase may be distributed around to outapiaries at any time during the year.

Cordele, Ga.

THE SWARMING PROBLEM IN THE EAST

Some of the Common Methods of Control Discussed; Natural Supersedure During Swarming

BY J. E. CRANE

Perhaps to no one subject connected with beekeeping has more thought been given than to the control of swarming. With the production of extracted honey this is comparatively easy. By raising one or two combs of brood into a super of empty combs above the brood-nest, filling their place with good empty brood-combs early in the season, and keeping the colony well supplied with room, there is usually little trouble with swarming.

It is quite otherwise with the production of comb honey, for the brood must all be kept below, and the brood-chamber crowded, in order to force the bees into the supers.

Destroying or decapitating a large amount of worker brood has been recommended as a sure preventive of swarming; but the practice is too expensive and disgusting to be thought of.

If one opens a large number of colonies week after week he may be surprised to see how many of these will have eggs in queen-cells, and sometimes young larvæ for three or four weeks, and yet never swarm, so evenly are the forces of the hive balanced in favor of swarming or opposed to it. We may take a hint from this, and use all those measures that tend to discourage swarming, such as giving an abundance of ventilation, shade, room for the queen to lay in the brood-chamber, super room for storing surplus, with bait sections, as well as the proper manipulation of the supers to stimulate to the utmost the storing instinct. I have also found that it is a decided help to destroy drone brood where there is much of it in the hive, or it will sometimes be found where there are many old combs. But after all is done that one can do to discourage

swarming, if the season is good, honey abundant, and the hives filled with brood, there will probably be many colonies that will prepare to swarm.

As fast as such colonies are found, prompt measures must be taken. If the colony is strong with a vigorous queen I would shake at once on clean worker combs. If these contain some honey it is just as well; and if half full of sealed brood I am inclined to think it is even better; but I do not often find the latter. When the bees enter the hive, or before, return to them the supers from the hive they have occupied. The absence of any unsealed brood will most likely cause them at once to give up any desire to swarm; and the half-filled supers will stimulate their storing instincts, and you will have them under control for the season unless the flow of honey is of long duration.

If you find a colony that is not strong making preparation to swarm, do not shake, as it will be of little value if you do, unless you take pains to nurse it and build it up; and even then it may prove to be an unprofitable venture.

If the queen from such a colony is old or not prolific, the best thing to do is to catch her and destroy her at once. It is not always easy to find a queen during the swarming season; but if you have a queen sieve it is not usually a long job. Then destroy all sealed queen-cells, and in eight days again destroy all sealed cells, and in another seven or eight days give a virgin queen. It is well to take from the brood-chamber any combs not occupied with brood, if possible, and to fill up with combs of mature brood. In this way work may be begun in the supers within a short time.

If I find a colony preparing to swarm with a queen of good age, and yet a colony which for some reason may not have a large number of bees, I often take the queen away, with perhaps twice as many bees as necessary to care for the brood, and place them in a new hive with an empty comb on one side and a comb of honey on the other side of this brood-comb. I set the hive aside, and throw a little grass or a few weeds over the entrance, and it will take care of itself. Most of the old bees will go back; but enough will remain to make a good beginning for a new colony.

The swarming season is the natural time for the supersedure of old queens, or such as have become exhausted by excessive prolificness. Queen-cells are started, and, when of proper age, the colony swarms; and the queen, unable to fly, drops to the ground and is lost. The colony returns to the hive,



"Playing with 'em.' From Amos Harker, Cambridge, Iowa.

awaits the hatching of a young queen, and, when she is old enough, swarms again with her. A young queen also takes the place of the old one in the parent hive. Now, if we shake a colony preparing to swarm with an old or poor queen on empty combs, or even start a nucleus with such a queen, we shall be almost sure to meet with disappointment, for she will most likely fill a small patch of comb with eggs, and disappear; and queen-cells are started on these in order that the colony may secure a queen to replace the one which the bees recognize as no longer of value.

But what should be done with all the combs of brood which have been taken from those colonies which were shaken on empty combs? Well, that is a part of my story. Early in the season there are usually some colonies that are not strong enough to begin work in supers. Indeed, not more than five or six combs of brood will be found in them, and in some it may be even less. When one has plenty of surplus combs of brood he can take out the empty combs or combs of honey from these colonies and replace with combs of brood; and these backward colonies, instead of spending the whole season in building up and getting ready for business, will soon be able to enter the supers and yield surplus.

The combs removed from these weak colonies can be utilized by giving to colonies preparing to swarm which are fit subjects

to shake. Brood can also be given to any nuclei you may have made, thus building them up into good colonies.

But how about increasing your stock if you do all you can to prevent swarming? In almost every yard there are some colonies that are very forward—more so, even, than desirable in order to secure the best results in surplus. I know of no better way than to take from such early in the season a comb of hatching brood and bees—yes, more than bees enough to care for it, for some of them are likely to return to the parent hive. Then confine the bees for a day or two in a new hive, or throw weeds over the entrance. Give them at the same time a comb of honey and a brood-comb, and a day later give them a queen-cell nearly ready to hatch. If all goes well, in a few days there will be a good nucleus with a young laying queen; and if brood-combs are supplied as fast as their strength will admit, you will soon have a colony capable of storing considerable surplus in case the season proves to be favorable.

If you have no maturing queen-cells, take the first colonies that prepare to swarm, and divide them into three or four strong nuclei, giving all except the one that has the queen a queen-cell already built on the combs; and, as soon as the young queens are laying, build up as fast as you can. Such colonies gave us a good surplus during the season of 1912. These methods not



Hiving a swarm in a soap-box. From F. E. Bornemann, Bay City, Oregon.

only favor increase, but at the same time help to keep down natural swarming.

The rules given above are for those who handle their bees often, and depend on their manipulation to control swarming. Of course, queens' wings must be clipped; and while it gives one perhaps about as much work as to depend on natural swarming, it saves a lot of time. I forgot to say that if, at any time at the close of the day, you have on hand a surplus of brood-combs, they can be put on top of some weak colony or placed in some colony that may be loafing, making them care for the brood.

For those who have but one yard of bees, and do not care to handle them more than is absolutely necessary, and for those who prefer to let their bees swarm naturally, I know of no better way than to hive early swarms into hives filled with dry combs, and, after eight or ten days, run the new swarms into those that swarmed first. In this way second swarms are largely prevented, all are kept strong, and the largest amount of surplus secured. While this does not wholly control swarming it does control increase in a very satisfactory way.

If you lack empty combs, place over strong colonies as many supers full of frames filled with comb foundation as you are likely to need. The bees will draw out the foundation into comb more economically than in any other way. New swarms or shaken swarms do not, as a rule, take kind-

ly to foundation so far as my experience goes, and often desert a hive filled with it when they will accept half-drawn combs with the greatest pleasure.

Middlebury, Vt.

CHOOSING A LOCATION FOR AN APIARY

The Importance of a Near-by Source of Nectar and Pollen in the Spring

BY J. L. BYER

At this season of the year many, no doubt, will be considering the matter of starting apiaries; and while the experienced beekeeper needs no advice along this line, a few hints to beginners may not be out of place. Naturally, when thinking of starting an apiary of any size, the first thing that will be considered is the prospects of having enough honey-producing flora to produce a crop of surplus honey; for, no matter how many colonies of bees one may have, and no matter how strong they may be in numbers, if there is no forage for the bees at the time surplus should be gathered, all the previous labor of the beekeeper and of the bees will amount to naught. However, situations of that nature are scarce; and, as a rule, if one has bounteign big colonies at the opening of the clover flow he may safely count on getting at least a partial crop, one year with another.

Granted, then, that there is enough clover,

basswood, or other staple sources of nectar to give promise of a yield of honey, the next thing to be considered is the spring-feed proposition. Indeed, after a number of years' experience I am a bit doubtful if this question should be designated by "next" or by "first," as every year I am more than ever convinced that a good spring location is about as essential as any thing in so far as the getting of a crop of honey is concerned. One thing is certain to me, at least; and that is, that I would take an ordinary clover location coupled with a first-class spring locality in preference to one having a superabundance of clover, but with practically no spring feed. It is very essential to have this spring feed right *near* the apiary if possible, as in the trying changeable weather of the spring season many bees are lost at a critical time when all are needed, if they have to fly long distances to the alders, pussy willows, etc., in search for early pollen and honey. If I had the choice of two locations, in one of which there was abundance of spring feed within half a mile of the apiary, while the clover and other summer pasture was two or three times that far off, and the other one with abundance of clover right near the yard, but the spring feed scarce and a long distance away, I certainly should prefer the first one described, every time. I have had, in the past, locations of both these kinds, and *always* the ones with spring feed near by have given best results.

Having decided on the section where you

want to have an apiary, the next thing is to find a suitable spot to place the bees. Shelter is very desirable; but unless it is one of the natural kind I would just as soon have none at all. In fact, while I like yards sheltered, for more than one reason, yet right near us I know of apiaries that have wintered outside, right in the open, year after year, and the loss has been but little heavier than in more sheltered apiaries. Apiaries sheltered too much, and not in the right way, are like a two-edged sword—apt to cut two ways. Bees may be enticed outside by the sunshine, only to be chilled to death by cold winds; whereas the same hives out in the open would have the cold air circulating around them so that the bees would not leave at all in such treacherous weather. In the past I have been having most of my yard in orchards, and in many ways these are about as desirable locations as one can find. Objections are that snow usually drifts badly among the trees; and in many orchards the bees are too close to dwellings, cultivated fields, etc., and at some seasons they are apt to make trouble for those who own the property the bees are on. Of course I am now speaking from the standpoint of out-apiarries. I never like to have the bees give any trouble if it can be avoided; and so when starting a new yard or moving one of these I now have, I am trying to have the bees placed in an out-of-the-way position where they will be no bother to any one, and where I shall not be placing any de-



A new location for one of J. L. Byer's out-apiarries. The yard is sheltered on three sides by a cedar swamp, and the buildings break the force of the wind at the one open side.



Lone Tree apiary of Bell E. Berryman, Central City, Nebraska. This apiary of 190 colonies was built up from 55 weak colonies in the spring of 1912, and yielded 9000 lbs. of honey.

pendence on any one at the place looking after them.

While it is essential to have some one pay occasional visits to the yard to see that all is well in so far as general conditions are concerned, such as hive-covers being all on, etc., I have found it best not to depend on anybody watching for swarms, etc., as I then know what I have to do, and experience has proven to me that this is the best policy.

Water for the bees in the spring months is a very important matter—in fact, one of the necessary things to see to if you wish to avoid heavy losses of bees, as will surely result if they have to travel a mile or more for their water; for assuredly they must have water, and lots of it, if brood-rearing is to go on at the rate it has to in order that the colonies be strong enough for the main honey-flow in June. Many arrangements have been suggested, and actually used, for providing water right in the yard; but if the bees can get it near the apiary in a nicely sheltered position they seem to prefer it to getting it from a barrel or other arrangement fixed up for them. While one can fix up a place for the bees to get water right in the home apiary, it is a different proposition in an out-apiary, and—well, to be perfectly frank I shall have to confess that I have to let the bees get their water the best they can, as it would be a lot of work to drive around to a number of yards, filling up barrels, etc. At the same time, I am free to admit that this work would pay, if the bees had no

access to water quite near their hives. At each of my yards at present, water is quite near, so I am saved the trouble of supplying it artificially.

This spring I have to move one of my apiaries; and as the location I have selected seems to be about ideal I have taken a picture for the purpose of illustrating what I have been trying to describe as the desirable features of a good location. As will be noticed, the honey-houses have already been moved, and are standing upon temporary foundations till the snow goes in the spring, when the buildings will be lowered and leveled, and placed on cedar blocks. The bees will not be moved till after they have had their first flight. They are wintering outdoors half a mile from where they are soon to be moved. Two empty hives, one on top of the other, are shown in the open space, and this spot will be about the center of the apiary when bees are placed. The cedar swamp shown will be on the north, northeast, west, and southwest, while the only open space will be at the southeast. On this side the buildings are placed end to end, not so much for protection as to save fencing, as I shall have to fence the plot to keep stock from roaming among the hives and upsetting them. This piece of ground (about half an acre) is level, and high and dry; and while the shelter is a little *too* good(?) to suit me, still, it is a different matter from a board fence, as bees will not be tempted to fly over a wide space of trees as easily as they can go over a high board fence, to drop at



FIG. 2.—Hiving the swarm after it was carried home in a cloth.

once, never to return. While, as I have said, the ground is high and dry, yet right near where the bees will stand the ground slopes abruptly toward the swamp, and there the soil is springy, with the water oozing out all summer. Here the bees can get water in a sheltered location, and never have to fly 50 feet from the yard. The nearest cultivated field is about 20 rods away on the east side; and as this is the only side of the apiary that has cultivated land near, naturally we are hoping that all danger from that source will be reduced to a minimum. As to spring feed, it starts right at the south end of the apiary; and the bulk

of all there is in the vicinity is within half a mile of the spot. Abundance of alsike near by, with about enough buckwheat grown to supply winter stores each season, about completes the description of this location.

Mount Joy, Ont., Canada.

9000 POUNDS OF COMB HONEY FROM 55 COLONIES, SPRING COUNT

BY BELL E. BERRYMAN

I am sending you a photo of one corner of my apiary of 190 colonies. In the winter of 1912 I lost 45 colonies out of 100. My 55 colonies left were all weak and short of stores in March. I fed them liberally, and increased them in June to 190 colonies by dividing, and harvested 9000 lbs. of section honey. The largest yield from any one colony was 240 lbs. of section honey. I lost none last winter, as the winter was very mild compared with the one before last.

Central City, Neb.

CHASING A RUNAWAY SWARM 2½ MILES

BY G. FRANK PEASE

Bees swarmed here last summer as never before in my experience, even when the flow of nectar was slow. The pictures shown are of a runaway swarm from one of my hives. I chased the bees 2½ miles, and brought back the swarm on the limb on which the bees had settled. The limb was thrown over my shoulder, with a cloth



FIG. 1.—A runaway swarm that Frank Pease, of Marshall, Michigan, chased for 2½ miles. Photo was taken from the top of a building.



FIG. 3.—Enough bees to pay for the 2½-mile run.

wrapped around the bees. The swarm, Fig. 1, extended for three feet along the limb.

A tinner made the smoker on top of the box, from heavy copper. The bellows was from a Clark cold-blast smoker.

In Fig. 2 is one of my glass and tin combination covers. I pulled a string to take the picture.

BEES POISONED BY A BLACK SPIDER.

I was at one of my hives this morning, and saw a black spider killing bees. He ran toward the entrance, and two bees pounced on him. He held them off the length of his legs, and they died inside of a minute without his even biting them; then he dragged them back to a pile of dead ones which he had killed—forty or fifty of them, and seemed to be sucking the honey from under their throats. Others flew toward him and merely touched him a little, and they seemed to be stupefied. He must have ejected poison toward them, such as I have smelled when a spider has been near my nose. The bees would cease to struggle in a very short time, and could not get their sting near the spider as I expected them to do.

Marshall, Mich., June 13.

ALEXANDER PLAN FOR MAKING INCREASE CARRIED OUT TOO LATE

BY M. J. KAUFMAN

About a month before the time this picture was taken I started with an eight-frame colony and a select queen. I fed the

bees steadily from the time I got them, which was the 3d or 4th of May, 1911; and as the colony became very strong I decided to divide it. I divided them according to the Alexander method, and this was the lower hive. When they swarmed, which was three or four days after I had separated them, they had drawn out only five of the frames from the foundation. They had plenty of room, and the weather was not unusually hot. I had given them a select queen; and, not having another hive at the time, I cut out the queen-cells they had built; and the queen being clipped, and not being able to get away, the swarm returned of its own accord. Notice that I had raised the super as shown in the picture, as I thought it might afford ventilation if the bees thought it was too hot in the hive.

New York.

FORMING NUCLEI TO PREVENT SWARMING

BY R. M. SPENCER

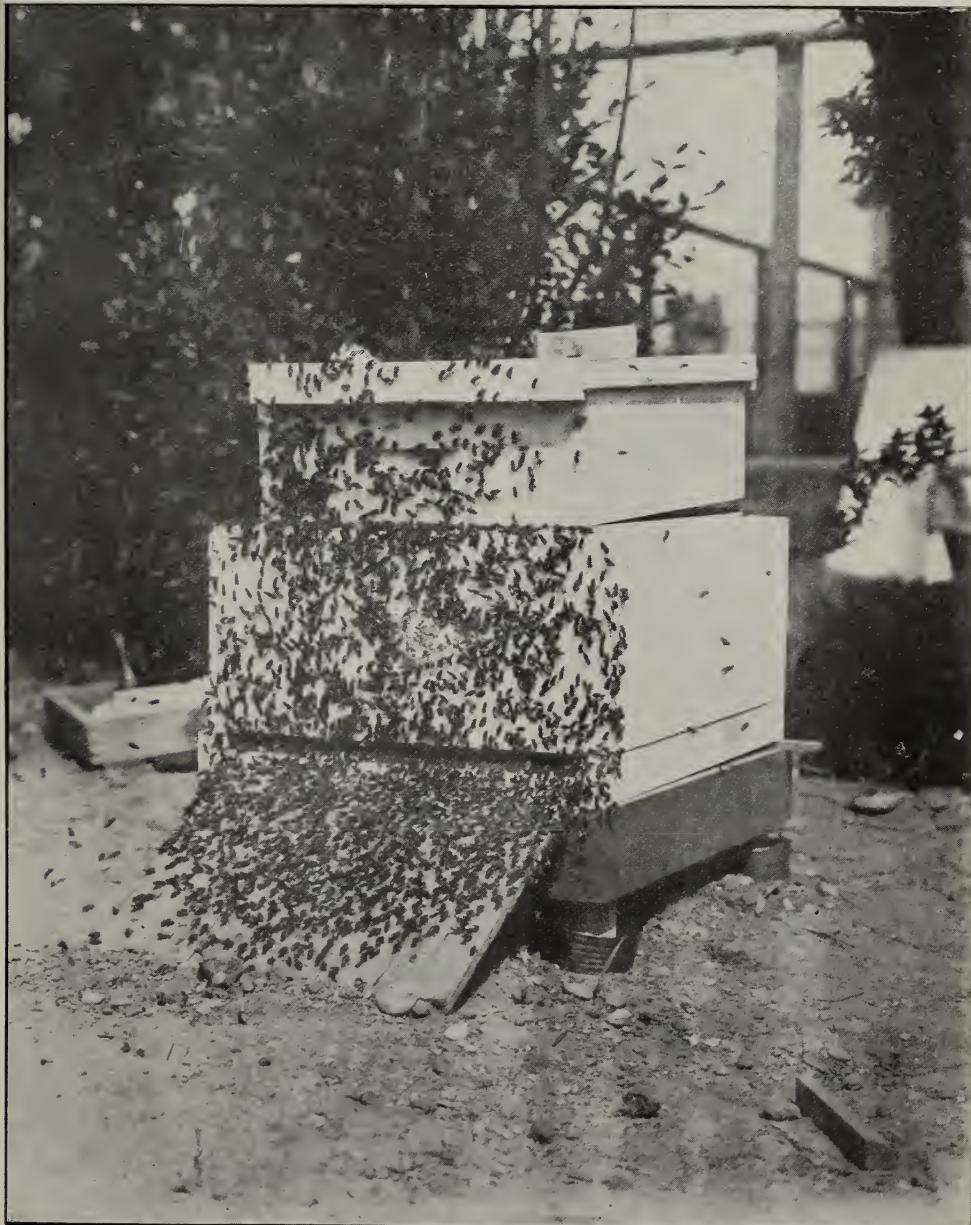
When the swarming season begins in March we go over all the hives once every eight days, cutting out all cells, making nuclei, or, where colonies have good stock and cells, we often make straight division. When we are able to get the young queens we take frames of bees containing about three times as many bees as we want, and shake them in front of the small nuclei on the ground, allowing them to run in and to cluster on the several frames of brood pre-

viously given the nuclei. About a third of these bees are young nurse bees, and will stay with the brood. This method avoids any trouble of closing up or opening later. Every eight days we again shake a frame of bees in front of each one of these nuclei, thus helping the nuclei and holding the full colonies in check from swarming.

BEES SLUGGISH BEFORE THEY SWARM.

One of our great troubles in this locality

is spring supersedure of queens; and in many cases this causes swarming when it would not happen otherwise, the breeding season being so long that many of the queens fail in the spring of the second year. Often by simply opening hives and taking out frames of bees one can tell by the action of the bees whether there are cells in the hives. The bees are always filled with honey, and act sluggish when making prep-



Swarm returning to the hive because the queen was clipped.

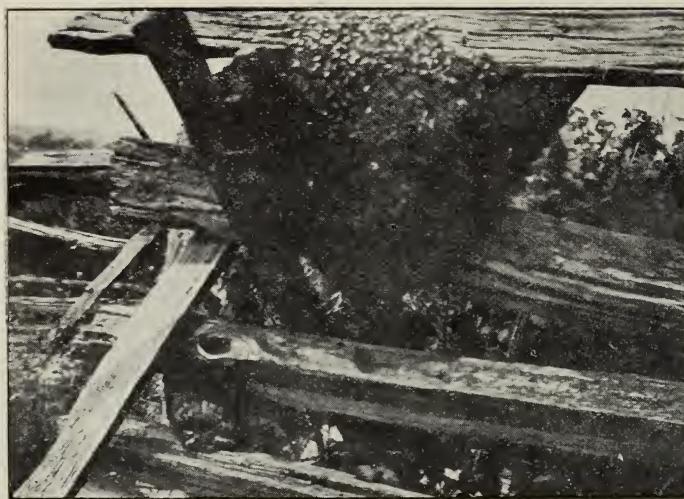


FIG. 1.—A swarm that chose a very convenient clustering-place.

arations for swarming. When bees are active on the combs there is little danger of swarming. By using this method of judging when colonies are preparing to swarm I have often gone over 500 or more colonies in a day, and very seldom make a mistake as to whether a colony will swarm within a week.

GOOD VENTILATION AN AID IN PREVENTION OF SWARMING.

Another great preventive of swarming, as all beekeepers know, is ventilation. All our hive bottoms are loose, and have full-width entrances on both ends. As soon as warm weather comes, both of these entrances are opened full width. I am cer-

tain that this prevents swarming to a great extent.

Nordhoff, Cal.
HIVING A SWARM CLUSTERED ON A RAIL FENCE
BY J. L. BYER

Before a swarm leaves the place where it has clustered after swarming, it is thought that, as a rule, scouts are sent out, and a place is found before leaving. This may be the rule, but, like all other rules, there are exceptions to the rule, and a bit of experience with a swarm a short time ago proved this quite conclusively.

On Friday, May 28th, my brother-in-law phoned me from the Cashel yard that a large swarm had come out, and that he had caged the clipped queen and had let the bees go back to the hive. I felt pretty sure that the bees were superseding the queen, and knew that there was danger of their coming out any time with a young queen, departing for parts unknown. However, I could not get over before the following Monday, so I let them take chances.

When the family were at church Sunday I suspect the colony swarmed again and clustered in the top of an apple tree in the apiary. Any way, Monday forenoon the swarm was noticed leaving the tree and starting off north. My brother-in-law followed them, and they went so slowly that he just had to walk to keep up with them, notwithstanding the fact that the day was calm with no wind to hinder their flight. They went less than a quarter of a mile and alighted on the top of a rail fence. Fig. 1 shows the swarm nicely clustered on the rail fence. Fig. 2 shows how the rail was lifted



FIG. 2.—Shaking the cluster into a hive.



FIG. 3.—Safely hived. (J. L. Byer sitting on the fence.)

from the fence and the swarm gently jarred into the hive. The picture in Fig. 3 was taken after the bees had been shaken into the hive; and if ever a crowd of bees were glad for a home they surely were, as they settled down right at once with that home cry so well known to the beekeeper.

My nephew, Leslie Williamson, happens to have a camera, and that explains how we got the pictures. By the way, I rather smiled when the picture was shown me, as I am perched on the fence in Fig. 3. It is rare that I wear a veil except in extracting time, and there was no need of one at all under the circumstances, as the bees were not at all cross. I had put it on when first going over to where the swarm was, and had forgotten all about it till after the camera had snapped.

Mount Joy, Ont., Canada.

SWITCHING THE HALVES OF A DOUBLE BROOD-NEST TO CONTROL SWARMING

BY J. A. YEOMANS

In the June 15th issue for 1912 I had an article, p. 366, concerning some experiments I have been making with the view of reducing swarming and at the same time increasing the production of surplus honey. I was much pleased to hear from beekeepers from all sections, showing their interest in these experiments. One man in particular reported as having worked along the same lines with results and conclusions the same, so far as he had progressed.

The summer of 1912 was a poor one for honey production in eastern Washington.

Warm summer weather was a scarce article. A few warm days would be followed by a spell of cold or rainy weather that drew on the surplus gathered by the bees during the warmer period. Some of my bee-keeping friends reported practically no crop, and at least one said that he feared that not enough was on hand for winter stores. My crop was 65 pounds per colony, spring count, which I considered satisfactory under the conditions.

During the season I tried some experiments

which I am confident cut down my yield somewhat. For instance, I was anxious to see how early I could raise the "hatching story" of the brood-chamber and get the bees to start work in the supers (supers placed below it and above the laying story). I therefore tried this arrangement very early, before the hive was at all crowded, and before there was any real need of it. In fact, the result showed there were not enough bees in the divided colony to generate sufficient heat if weather turned cold.

The bees started work at once in supers (in which I had placed some bait sections); but in a few days the weather turned cold and rainy, and honey-gathering was stopped completely for several days. The field bees having all gone down from the hatching story, leaving only young bees in it, there were not enough left to cover all the brood, and some of it was chilled and killed. In spite of this setback the colony built up very rapidly. I should not have commenced switching so early. I feared the above would happen, but wished to try it any way. If the hive had been full of bees the result would have been different. I did not wait until the colony was strong enough.

The results of the past year convince me that the principles involved in this system are right. I expect and hope the beekeeping fraternity will improve on the details.

For the benefit of those who may not have the June 15th number, 1912, I will repeat in a few words the principles of the system, and will then try to answer the questions that have come to me from all sides. I have had letters from California, Oregon,

Wisconsin, Alabama, Pennsylvania, and one from Switzerland.

First, the only special equipment needed is a wire screen with a Porter bee-escape. This should be bound with strips of wood of sufficient thickness to give bee space above and below. A friend of mine, Dr. R. E. Shanks, of Spokane, has made an escape which is a great improvement on the crude ones I used in my experiment. Through his courtesy I enclose photos of these escapes. Dr. Shanks has been following this system for two years, and, although a beginner in beekeeping, he has had no swarming. The wire screen should be the full size of the hive used, so that the heat of the lower part of the colony will rise into the hatching story, and so that the hive odor will remain the same. Fig. 1 is a front view of the screen used.

The Porter escape is cut off just in front of the round hole in the back end of the top of it. It is then imbedded in a strip of board crossing the front of the screen. A passageway is then cut through the frame out to the open air in front, and a plug made which should be used after the first 24 hours after a switch of stories is made.

When the plug is out, a piece of super section should be slipped in, closing the opening to the lower story. The light which enters through this opening will attract and empty the hatching story of all field bees in a few hours. If the opening is not closed in a few hours, many of them will commence to use it as an entrance. After 24 hours the slat should be taken out and the plug inserted, so that all bees entering the escape will go into the lower story and not be able to return.

Photo No. 2 is the top view of the escape-screen and No. 3 is a bottom view. From these views I think any beekeeper will catch the principles involved.

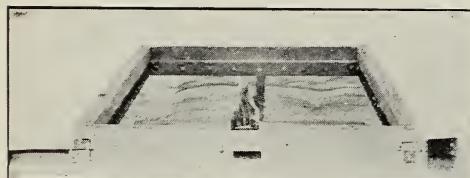


FIG. 1.—Front view of Yeoman's screen escape-board. The plug used is shown standing up on the screen.

Several have asked me if the plan would work with the ten-frame hive. I use the ten-frame Danzenbaker, and feel sure the system will work with any size of hive. I now winter my bees out of doors in double brood-nests. Yesterday (February 16) the temperature rose to 51 degrees, and the

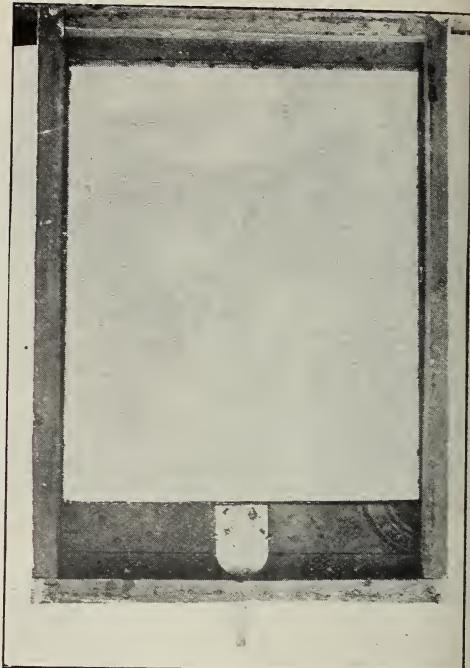


FIG. 2.—Top of screen—next to bottom of hatching story.

bees had their first flight since fall. If I did *not* winter in double brood-nests I would put on a second brood-chamber as soon as the bees commence to build up strong in the spring.

A SYNOPSIS OF THE PLAN.

As soon as surplus honey commences to come in, or if there is any sign of swarming (or if a new beginner is not familiar with these indications, when both stories are well filled with bees) raise the upper story and put a super of sections below the upper, or "hatching story." At the same time (or 24 hours later, which I find is much easier because the field bees have gone below and can not get back, thus reducing the number of bees in the upper story, and making it much easier to find the queen) remove the queen to the lower brood-nest, which we call the "laying brood-nest."

Ten days later, switch brood-nests after cutting out any queen-cells which may be started in the "hatching story." This makes what has been the hatching brood-nest for the past ten days the laying brood-nest for the next ten days. The bees hatched during the past ten days, and the honey and pollen used during this time have emptied thousands of cells ready for the queen to lay in, and this she promptly does as soon as it becomes the bottom story and she is placed in it.

This switching keeps the queen laying

continuously, removes her and the field bees from all brood and eggs every ten days (virtually the same as swarming), and prevents brood-nests from becoming clogged with honey. The supers remain constantly in the same relative position to the hive entrance, and the field bees are not interrupted in their daily habit of storing the surplus.

Repeat this operation every ten days through the swarming season, which will vary according to locality, or introduce (24 hours after switching) a young queen to the top or hatching story. As this story contains young bees only, it is an ideal condition for introducing a new queen. Then kill the old queen the next time you switch, and leave the hatching story on to hatch out entirely.

I think that most beekeepers agree that a young queen rarely swarms during her first season, so you will by this means, as soon as a young queen is introduced, end the danger of swarming in nearly all cases.

A Pennsylvania friend asks about using a hive filled with foundation and placing it below an old hive in order to get two brood-stories to start the plan. I should prefer to divide the old brood-nest as nearly equally as possible, and fill out both stories with frames of full sheets of foundation.

I like to have both "hatching" and "laying" stories have about an equal amount of brood in them. Also, by dividing the old brood-nest equally there will be enough old combs containing pollen and honey to supply the nurse bees in the hatching story for the ten days they are shut off from all outside supply. A supply of honey and pollen sufficient for this period of time must always be on hand in hatching story.

Spokane, Wash.

COMB HONEY FROM A SHORT FLOW

Worker Comb from Starters

BY A. V. SMALL

Last summer the swarming impulse was above normal; and as our flow is usually of short duration, comb honey could be secured only by a plan that would satisfy the swarming desire, and at the same time force the June flow into the supers.

The plan which gave me the best results was to shake the bees into a contracted chamber of starters. This was done in the early part of the flow. The colony was left on its old stand, and I merely took away the brood, contracted the brood-chamber to the space of six combs, and gave the bees a set of starters. In the colonies treated there was considerable comb in the supers; and in order to establish the brood-nest I placed a frame partly filled with young brood in the center of the contracted brood-chamber, filling out with five frames of starters. This was the first hive tried.

There was a good flow on the day the work was done, and the bees worked right along as though no change had been made. The queen began laying in the empty cells in the frame of brood I had placed in the center. The bees began to work on the starters, and every thing went well except that I had established the brood-nest, but had not provided the storehouse for pollen. The brood comb that was used had been taken from near the center of the hive, and was almost free from pollen. In the average brood-chamber the two outside combs contain nearly all the pollen in the hive. If the queen is good they are about half filled with brood and the rest is honey. These two outside combs were gone, and the first day's pollen went with the honey up into the sections.

The next colony that built cells I shook, contracted the brood-nest to six frames, leaving them their two outside combs and filling in the center with four frames of starters. In this case the pollen storehouse was un-

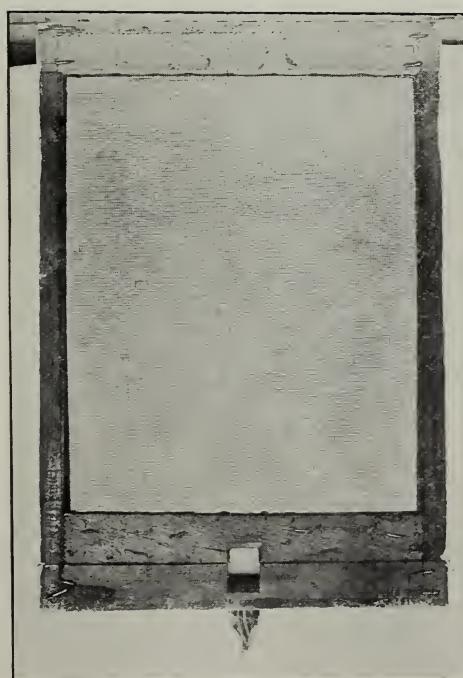


FIG. 3.—Lower side, next to supers.

disturbed. A bee coming in with pollen could go to the outside comb where it had been in the habit of going, and unload as usual. There was not a single cell of pollen in sections over brood-chambers where the outside combs were left in.

The surplus honey went up into the sections, as the two outside combs were nearly filled to start with, and the four frames of starters in the center were occupied by the queen almost as fast as they were drawn out. This gave us four good worker combs from starters, for it seems to be a fact that the bees will build worker combs as long as the queen keeps filling them with eggs. This is the reason it is necessary to contract the brood-chamber.

If the bees had been given eight or ten frames of starters they would have drawn them out faster than the queen could occupy them, and a large amount of drone comb would have resulted. Then, too, as soon as the bees got ahead of the queen a good deal of honey would have been stored in the brood-chamber. This is the reason one must use starters when following this plan, instead of full sheets, if he is to get the best results. The full sheets are drawn out too fast.

In a week or ten days from the time of shaking, these combs will be drawn out and filled with brood. At this time, if one should give four more starters he *might* get worker comb; but this can not be depended on, and it is more desirable to fill out the brood-chamber with full sheets or with four of the frames that were taken away at the time of shaking. These frames will be practically all sealed now, and a few frames of hatching brood are desirable at this time in order to keep up the strength of the colony.

Worker combs can also be built in weak colonies, but they are very apt to be round-bottomed, with the lower corners incomplete. The following year this corner space is usually filled in with drone comb, making an undesirable frame.

Where starters are used with shaken swarms, as described above, the combs are full and square at the corners, having all the appearance of foundation-built combs.

As a word of caution, put on supers with *bait sections* as soon as the colony is strong enough to warm them up; and be sure there is some work being done in the supers at the time of shaking. The brood from the first colonies shaken can be placed above queen-excluders over the colonies one expects to shake next. Within ten days, about half of this brood will have hatched, and the other half will be sealed. If one wants increase he has merely to set this hive body

of sealed brood and bees on a new stand, and in a few hours give them a ripe queen-cell or a queen. This is one of the most satisfactory methods of increase I have ever tried.

The colonies over which this brood was placed are now ready for shaking.

Colonies strengthened in this way just at the beginning of the flow usually give me the best results in comb honey. While I have spoken of leaving this brood over the colonies ten days, a week is long enough, and gives three more days of flow for the sections. The brood from the colonies last shaken can be placed over colonies too weak to work in sections; and if increase is not desired the combs can be left over these colonies to receive what surplus they may make.

North Topeka, Kans.

THREE SWARMS IN ONE HIVE

BY A. G. LUCIER

It may be interesting to know how the bees got on the top of the hive as shown in the illustration. Hives No. 1, 2, 3, in a row, were preparing to swarm at the same time. One morning No. 3 cast a big swarm. The bees were hived in the usual manner as practiced with clipped queens. The very



Three swarms that united with the bees in one hive, making a colony too large for the hive.



An August swarm that built comb in the open.

next day they came out again; and, finding that their queen could not accompany them, instead of going back to their own home they went into hive No. 2, and in a few minutes came out again with the bees in that hive, and repeated the process as before stated, but went into hive No. 1 with the bees from No. 2. The weather being rather warm, the cover of the hive was lifted to ventilate. There were so many bees when the three swarms united that they fairly boiled over, as shown in the photograph.

Powell, Wyo.

AN AUGUST SWARM

BY A. B. GILES, M. D.

I am sending you a photo of a swarm which came out of a hive on the 27th of last August. They clustered in an apple tree, built comb, and had some brood. This picture was taken Oct. 13 by one of my neighbors, Mr. R. J. Clemmitt. I took 48

sections of white honey from the hive from which they came. It is remarkable that they swarmed so late in the season that it was a first swarm, and that they stayed so long in the open.

Forest Park, Md.

SWARM CONTROL—INCREASE AND DECREASE

BY RALEIGH THOMPSON

If a beekeeper desires moderate increase and a crop of honey he should first let his bees swarm, and then set the new colony on the old stand with the old colony by the side of it. In four days he should remove the old colony to a new location, put on a queen-trap, and wait for the second swarm, which will issue in from nine to fourteen days from the time the first swarm came out. He should then catch the virgin in the trap, which will prevent the swarm from leaving, for a young queen is very gay. The trap should not be removed until the bees begin to return. Then the old hive should be removed, and another one put in its place. Put the trap on this hive and let the queen loose through the hole in the trap for that purpose. Provide for the bees a frame of eggs and larvæ.

Take the old colony to a new location, and the next day divide it into as many colonies as can be supplied with queen or good cells. Give them a frame of eggs and larvæ. It makes them feel more at home. One should remove all supers from the first colony at the time it is lived. This is the best plan for the novice, and I think for older beekeepers as well, for there are very few queens that will beat swarming queens.

THE SHAKEN-SWARM PLAN.

Now for swarm control. I use the shaken-swarm plan given in the A B C and X Y Z of Bee Culture when I do not allow natural swarming; only I go a few steps further. I set the old hive by the side of the new colony, and in six days I put on an entrance-guard and shake the bees into the new colony again, leaving only enough to take care of the brood and queen. One must be careful if it is a natural swarm or he will find one or more queens on the guards. Now save the best cell or queen, and destroy all the rest if they are not needed elsewhere. Set the old hive on the other side of the new one, leaving an entrance at the further corner. In four days more move it to the other side, leaving the entrance at the further corner again. If it is a shaken swarm, one must raise queens for the hives, for a queen made by a shaken



One of J. M. Buchanan's outyards standing on the site of an old Yankee fort near Franklin, Tenn.

swarm is of no use. Now, if one does not want any increase, leave this old hive by the new one; and, after the flow is over, work the old queen-hive into the new queen-hive.

If I wait a little too late I use the paper plan of uniting, killing the old queen first. The best plan is to remove all the brood from the old queen to the new one every fifteen days as long as there is brood to move, for the old queen and bees are worthless, as they are all old, and the hive with the young queen is sure to winter, for the bees are all young, and there are plenty of them. The old hive and combs may be used the next year. These plans are applicable to a home yard rather than to an outyard, unless the out-apiary happens to be within a few miles of home.

If one has more bees than he wants to winter, he should double up, following the paper plan. If he has a choice of queens he should kill the undesirable one. If he has no choice, he should pay no attention to the queens. The bees will take care of that part of it. In southern Indiana I win-

ter them in two ten-frame stories, and they are boiling over with bees when the flow comes—about May 20.

Put all of the brood and bees into one hive, and put on one super of sections with full sheets of foundation, and another on top of this with drawn combs or one super. Just as soon as the bees begin to draw out the foundation, raise it up and put another under it. If the brood-chamber is not full of brood, use only one super; but in order to secure the best results it should be full. Put an excluder on some of the weak colonies, and stack the empty combs on them about three to the hive, for use later on, for part of these colonies will swarm within ten or twelve days.

One should put the sealed brood in the center of the hive—that is, if he has a hive full. If not, he should put empty combs in the center. If sealed brood is placed in the center, as soon as the brood hatches the queen will fill the cells with eggs and put more honey in the super. If one does not put eggs and unsealed brood on the outside,

when the sealed brood hatches they will fill the combs with honey, and there will be less honey in the supers, and more swarming, for the bees will always fill the outside combs with honey if they get a chance; and the longer there is brood in them the better.

Underwood, Ind.

OUT-APIARY ON THE SITE OF AN OLD FORT

BY J. M. BUCHANAN

I am sending a photograph of one of my outyards, which, in its location, is somewhat unique. On the summit of a hill, overlooking the town of Franklin, where, fifty years ago, was fought one of the bloodiest battles of the war, stands an old fort, once guarded by Yankee bullets, but now garrisoned with Dago stingers.

The apiary occupies the site of this old fort, which at present consists of a level spot partly surrounded by a bank of earth in the form of a horse-shoe, with the open end toward the south, thus providing an excellent windbreak for the hives. Part of this embankment can be seen in the picture. I have a nice honey-house and storeroom here, built so that it can be taken apart and moved. The apiary is easily reached with the automobile, which, by the way, we find indispensable in out-apiary work.

This yard contains at present fifty hives, run for extracted honey. It is surrounded by extensive blue-grass pastures, which are white with clover bloom during May and June. There are several groves of locust near by, and this forms one of our chief sources of honey. The locust honey is water-white, and of fine flavor, and slow to granulate. It blooms about the last of April; and if the weather is fair it yields quite heavily. During this flow last spring a colony on the scales made a net gain of 100 pounds in ten days.

Franklin, Tenn., Dec. 19.

IN MEMORIAM OF PAUL MICKWITZ

BY R. MICKWITZ

[The unfortunate subject of this sketch was at Medina in the winter of 1907-'08, learning what he could of American methods, and he later spent some time as a student with R. F. Holtermann. He was above the average in intelligence, as shown by his article on page 1257, Oct. 15, 1908, written, if we are not mistaken, when he had had only about a year's study of English. It was his intention to familiarize himself thoroughly with our methods, and then take the new ways back to his own country.

His death marks the end of what would surely have been a most brilliant career. It is the old, old story of an ambitious man so worried and hindered by a diseased body that the clear vision of life and

its possibilities was dimmed and distorted. Our sympathy is extended to his family and friends in Finland.—Ed.]

Dear Mr. Root:—I find it my sad duty to inform you that my brother Paul has voluntarily taken leave of life. He belonged to that class of men to whom life is especially a burden. High ideals and large plans, in connection with a sensibility which shrank from opposition, yielded to his inner conflicts. His was a retiring nature that prompted him to bear difficulties alone. He had resolved to devote himself to bee-keeping in this country, and to further it with all his powers. His time was short; still he had, thanks to an ardent enthusiasm manifested to all who had deal with him, many friends and assistants in modern bee-keeping, a knowledge of which he acquired in America. Of the great future for bee-keeping in Finland he was, up to the very last, fully convinced. His bodily power was broken by a series of complicated inner troubles, and he leaped from the deck of a ship in the open sea on the night of November 2.



The late Paul Mickwitz, former student from Finland, of American methods in beekeeping.

He was much encouraged to see in GLEANINGS for Oct. 15, 1908, his contribution, with comments, in regard to moving bees on a boat with Mr. Holtermann. I can assure you that your journal has but few readers as much interested in it as was my brother. He read especially, in connection with his agricultural studies, much about apiculture. In one of the note-books which he left he had laid a plan for a yearly review of the most striking paragraphs, taken from the most prominent writers of all lands, and which he designed to publish in several languages, in order to further a union of the beekeepers of all lands. But he was not permitted to carry out this project.

His fifty stands of Carniolan bees in Langstroth hives have been taken over by myself; and I will do my best to carry on the work he began. I enclose a picture of Paul, so that you can use it in your journal if you so desire.

Alberga, Finland, Dec. 14.

THE JUNGE-PIERCE HIVE-VENTILATOR AND NON-SWARMER

BY EDMUND W. PEIRCE

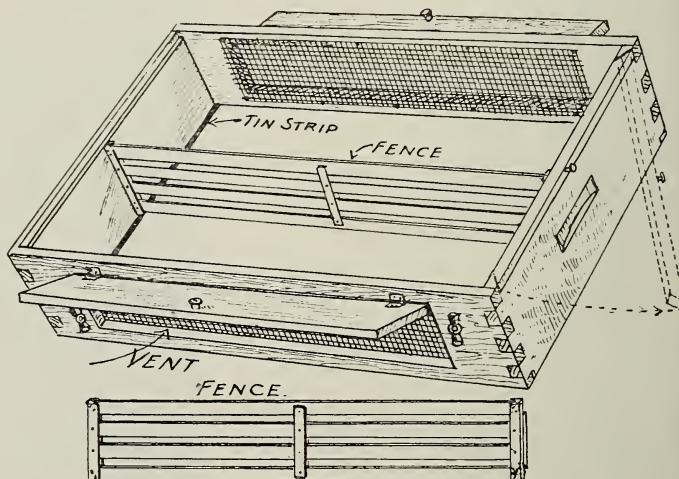
Wanted—a solution of the swarming problem—a problem that hitherto has baffled solution except by time-consuming manipulation or the use of complicated, cumbersome, expensive devices. Even these expedients, in the hands of any save professional apiarists, have been productive of very indifferent results. Indeed it may safely be affirmed that neither manipulation nor machinery can of itself ever prove entirely effective. The most that can be hoped for, when the complexity of this problem is considered, is the perfection of a simple and inexpensive appliance that with minimum manipulation will, in a majority of cases, prevent swarming; and, when it does not actually prevent, will at least measurably control or retard it. This I believe has been accomplished.

A few years ago there appeared in GLEANINGS a description by Mr. Walter S. Pouder of a non-swammer invented by Mr.

H. Junge, of Cumberland, Indiana, which had been used by him with considerable success, and on which he had obtained a patent. It consisted essentially of a deep super or shallow hive-body fitted with slats or fences suitably spaced, and with removable cleats for ventilation, designed to be placed on the hive between the bottom-board and the brood-chamber.

It is common knowledge among bee-men that room and ventilation are two most important factors in the prevention of swarming. How to afford these essentials without the incidental disadvantages of surplus comb-building, propolization, or drafts through the hive, has been the subject of much thought and experiment. Mr. Junge and I, each working independently and without the knowledge of the other, arrived at practically the same solution of the problem. A comparison of conclusions and modification and adjustment of ideas has resulted in what is known as the Junge-Peirce hive-ventilator and non-swammer.

The illustrations will make clear the principal details of its construction. A deep super is fitted with a series of fences so spaced as to insure maximum ventilation to the exclusion of comb-building. From each side of the super a section is cut out, and the opening fitted with a door hinged at the top, and opening to various widths determined by turnbuckles at its ends. This opening is covered with screen wire tacked on the inside. The meshes, three to the inch, are large enough to afford free venti-



lation, and easy egress and ingress to the bees, yet small enough to exclude robbers, spiders, and moths. A removable cleat in the end of the super affords additional ventilation when desired.

The non-swarmer is left on the hive all the year round, and colonies so equipped seem to winter better than those without the appliance. It is understood, of course, that in cold weather the contracted entrance

tends to prevent the development of the swarming impulse.

As has been indicated, it is not claimed that this invention will at all times and under all conditions prevent swarming. It has been pretty clearly demonstrated, however, that, with intelligent use, it will prevent swarming in a great majority of cases; and when it does not actually prevent, it will so retard it that days and possibly weeks of honey-storing will intervene. Moreover, swarms, when they do issue under these conditions, are apt to be unusually large and valuable.

While making no extraordinary claims for their simple device, the inventors feel that therein are involved principles that are vital factors in a satisfactory solution of this hitherto unsolved problem.

Zanesville, Ohio.

USING A STRAIN OF BEES ADAPTED TO ONE'S SYSTEM OF MANAGEMENT

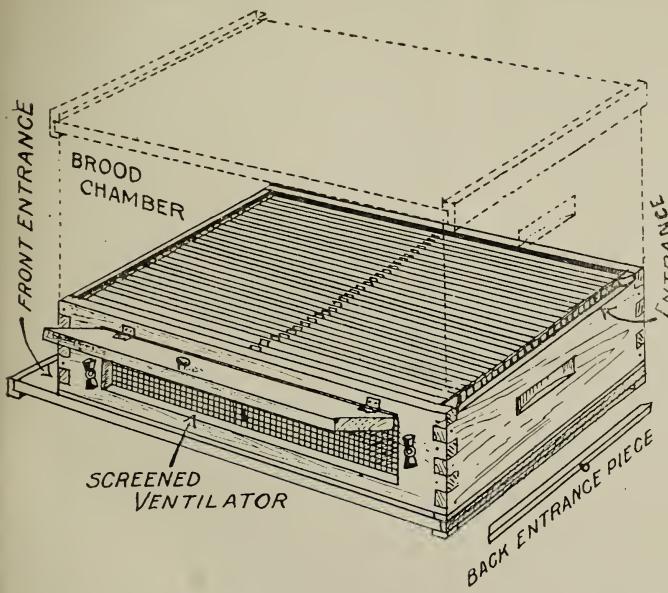
BY E. S. MILES

The amount of prevention desired must depend largely on one's location and the time of the main crop, as well as on one's knowledge and ability to make increase by other methods.

Where the main crop comes early and the flow is short, and one must get the most possible surplus from it, it has been my experience that the colonies that do not swarm at all, and that have no desire to, either as a result of manipulation or because of breeding, are the most profitable ones.

My main crop is basswood, which lasts from three days to two weeks, sometimes helped out a little with clover, catnip, and buckbrush.

It does not come so early but that with a favorable spring a colony *might swarm*; and with proper feeding, both the swarm and the parent colony be in condition for the flow. But our Iowa springs are so variable and uncertain that I find it safer to count on getting only enough from the best



is used, and the ventilators closed down tight. During the working season, or when the weather is very warm, the larger entrance is given and the ventilators opened wide. The ventilation is under perfect control, and can be adjusted to conform to varying weather conditions. It is very essential that abundant super room be given to prevent the crowded condition so conducive to swarming.

The principles embodied in this invention will be readily understood. The construction is such that there is free circulation of air under the frames, but absolutely no draft through the brood-nest. Surplus heat is carried off without danger of chilling the brood, and the bees are saved the greater part of the labor of fanning. Thus workers that otherwise would be so employed are rendered available for service in the fields or within the hive, to the obvious profit of the beekeeper. In order to enter or leave the hive, the bees must traverse at least a part of the non-swarmer. They are thus given the impression that they have abundant room, though in fact they are cheated out of it, so far as storage is concerned, the internal arrangement being such that the space is not available for comb-building. Furthermore, a convenient clustering place is afforded the nurse-bees, and this, by relieving the internal congestion,

colonies to bring up the weaklings so that, if I can reach the flow with all the colonies of that winter in good condition, I feel satisfied. Then, as mentioned before, I expect more honey if they do not swarm during our short flow.

I feel sure there are several practices the beekeeper can follow that tend to increase the number of colonies, and that may prevent swarming. I will try to give them in the order of their importance as they appear to me:

1. Breed all queens from colonies that have shown the least inclination to swarm, using queenless and broodless bees to build the cells, or at least to start them.

2. See that no colony is crowded for room up to the middle of the flow at least.

3. See that each colony is blocked from the bottom-board from $\frac{3}{4}$ to one inch in front, just before weather hot enough to crowd them out begins.

4. See that every colony is protected from the direct rays of the sun from about 10 A. M. till about 4 P. M.

5. See that every colony has comb built in readiness for the first surplus that comes.

It will not be necessary to dwell much on any of these points except the first.

The question of the *strain of bees, as related to one's system of management* has not, in my opinion, yet had the consideration its importance deserves. It is well known, and acknowledged by a great many practical honey-producers that almost all manipulation has to be varied to suit the characteristics of different colonies. Now, if we want a certain plan of manipulation to apply to all colonies we must have less variation in our colonies; and in order to handle the most colonies possible with a given amount of labor we *must* apply one manipulation or plan of treatment to all—manipulation here being considered only in its relation to swarming. If there were no variation in bees in regard to swarming, a manipulation that would give us the desired result with one colony would with all.

It might be said that a manipulation such as "shook swarming" or any process that cripples a colony or keeps it weak enough to prevent swarming proves that that manipulation answers the purpose.

But for the locality I have in mind it is not the purpose to have a part of a colony. We want a full colony, all the bees one queen will produce, and we want them to stay in one hive clear through the flow. It may now be asked how large a colony we may expect to have in this way, considering the nature of the bees.

It has been my observation that a colony is most likely to swarm about the time, or very soon after, the bees have reached their maximum breeding capacity, every thing else being favorable. If this is right, a colony or strain that reached the maximum breeding early in the season would be that much sooner past the swarming period; and if this earlier part of the season were less favorable for swarming, owing to certain weather conditions, then there would be less tendency to swarm on the part of this kind of strain.

Then, again, many think that an over-supply of young bees in proportion to the brood and honey to be cared for is likely to be a prolific source of swarming. If a strain reaches its maximum breeding early, say about the time of fruit bloom, then the dearth after fruit bloom discourages swarming, and so cuts down breeding that, when the main flow begins, there are plenty of old bees or fielders, yet no surplus of young, nor can there be for a month. Such a colony is just right for gathering and storing the most surplus, and is *not* in a condition to swarm. Is it not evident that, if one breeds a strain best suited to his "locality," other "manipulations" will be more effective, and the variation in all colonies be less marked? Of course, one should always take note of the variations of the seasons. If, at fruit bloom, conditions should be very favorable, increase might have to be made in order to prevent swarming. But the gain would come from the labor saved at the time of the main crop, and this saving could be applied in "keeping more bees" as well as in more surplus per hive.

Dunlap, Iowa.

DOOLITTLE METHOD OF SWARM CONTROL NOT A SUCCESS IN IDAHO

BY E. F. ATWATER

As soon as the essential features of the Doolittle method of swarm control in the production of comb honey had been published the writer gave the method a test in several yards, and that test has been repeated each season, although on a smaller number of colonies. We have no hesitation in saying that, if the method would give the results in this locality that it gives Mr. Doolittle in his own location, then it would be, in many ways, the ideal plan for out-yards and comb-honey production. But we find that far too many of the colonies shaken on the combs which had been above the excluder will swarm again in less than three weeks, resulting in poor super work,

and adding to the labor of swarm control. Only rarely does a colony treated by the Doolittle method prove superior to the average; and never, so far as the writer can remember, has such a colony proved the best in any yard. We even procured a breeding queen from Mr. Doolittle and requeened a number of colonies with her daughters, especially to test his method of swarm control; but even then the Doolittle system, with bees from Doolittle queens, has not been successful. The only favorable report that the writer has heard is from Mr. H. M. Weidner, of Payette, Idaho. We regret that the method has not fulfilled its promise, for we had hoped much from it.

We find that any system (natural or forced) of hiving swarms on combs does not give best results for the production of comb honey—owing, apparently, to the fact that the swarm is not satisfied. When we hive on foundation more energy is displayed, and a far smaller number of colonies will again attempt to swarm. We have tested some modifications of the Doolittle method—for instance, tubing the bees from the old brood-combs, as they hatch, into the new colony, desirable for a week at least to reinforce the colony with more bees.

Another difficulty is that in most parts of the arid West there is a marked reluctance on the part of the bees to carry up, into the combs above the excluder, any excess of honey in the brood-nest, until too late to give the queen sufficient room to lay. Even the Carniolans, least of all inclined to crowd the brood-nest, show this tendency to a marked degree if the excluder is used; while without the excluder there is no disposition to crowd out the queen in May or early June, before time for shaking. The Doolittle method does not give brood-room sufficient to prevent all colonies from getting the desire to swarm before the honey-flow unless an extra story of combs be given to the best colonies in May, so that the queen has access to the combs in more than one hive-body.

We have tried giving the queen the liberty of two hives of comb instead of confining her to one. Then when the proper time arrives we sort out the combs with little or no brood, and shake on them, which is more work, but which gives stronger swarms on the average, and with less danger of swarming before the flow. As before, however, too many seem not to realize that they have been swarmed, and must try it again. There is no question that, in nine cases out of ten, where we have used the Doolittle method, we could have secured

more profitable results if the bees had been shaken on foundation, and the combs above the excluder had been extracted. We therefore have no further use for the Doolittle method unless with a few colonies as an illustration to our students, and we await with interest the publication of a method which does not involve much uncertainty and the expenditure of a very large amount of labor.

Many of the former advocates of shaken swarming are now doing little or no shaking except of diseased colonies. They merely destroy cells, etc.; then if a colony persists in swarming they kill the queen, cut out cells, and, about nine days later, give them or leave them one cell. To tell the truth, there is as yet no method publicly known for controlling swarming in out-yards run for comb honey that is really satisfactory and adapted to a large business.

We have a plan which we use very largely, which gives good results; but it is quite laborious when several yards must be handled. Upon the opening of the flow, which is the signal for most of the swarming here, we shake into a new hive, with full sheets of wired foundation in the frames, three-fourths of the bees from two colonies. This plan gives powerful colonies, good for some fine work, and secures comb honey if there is a flow. But for the past few seasons, with large yards of 200 upward, too many such swarms will come out again once or twice, before settling down to work; and if a comb of brood is given when shaking, the bees will start unnumbered queen-cells upon it, and refuse to stay until the brood is removed, as described by L. Stachelhausen several years ago. It is possible that this disinclination to stay hived may be due to the use of full sheets of foundation, as this has been spoken of by several writers; but the condition was not so apparent when our yards were smaller. If the dividing of the cluster by the full sheets of foundation be the reason for the discontent, we can obviate it by giving an empty body below the swarm for two or three days. We will test the matter thoroughly this coming season.

If increase is desired we may give a queen or a cell to the shaken colony (one of the old brood-nest), or pile several such bodies of comb above the excluder on some weak colony, and use for increase when the brood is sealed, or leave them to be filled with honey for extracting. The writer has several times had hundreds of such hives of sealed brood piled above excluders, awaiting the arrival of queens from the South,

only to lose the opportunity to get a large increase by the failure of the queens to arrive until too late.

Here, if we can get a layer into a hive of brood or on a few frames of brood, in early June, we have a colony as good as the best for our second flow. If, on the other hand, we must wait and allow them to mate a queen, then they will be so much weaker when the second flow comes than they would have been if they had had a layer at the proper time, that they will often store little or no surplus from that flow.

Where are the queen-breeders who will give a bond to send queens at the time they have agreed to do so?

Meridian, Idaho.

MAKING INCREASE BY SHAKING BEES FROM STRONG COLONIES INTO SWARM BOXES

BY I. B. ELLIS

Assuming, first, that there are at least two bee-yards two or more miles apart, and that you want to double your number of colonies, you should first go to a tinner and have a funnel made about eighteen inches across the top, with a two-inch hole at the bottom. Next make about twenty swarm-boxes. I make mine by taking new redwood shakes and cutting them in two in the middle for the sides; and for the ends I use blocks $\frac{7}{8}$ thick by 6 inches square, nailing all together. Cutting out nearly all of one side, I tack on a screen, and bore a two-inch hole in one end of the swarm-box to hold the funnel.

You are now ready to go to your apiaries and make the increase. It is necessary to build up the yards early in the spring by artificial feeding until the yield of honey begins from the early flowers. At yard No. 1, first go to a strong colony and find the queen; then set aside the comb containing her. Have the helper hold the funnel in the swarm-box while you shake two combs with adhering bees down into the funnel. Give them a quick shake, and the bees will go rattling down into the swarm-box. Shut the hive and go to the next strong colony, and take out two combs of bees as before, being careful not to get the queen. Shake the bees into the funnel as before. When visiting the next colony take out only one frame of bees (it does not need to be quite as strong), and shake them into the funnel. I like to take out five frames of bees and confine them in a swarm-box, as it makes a nice little colony. Now take out the funnel and slip the slide. Proceed in the same way until the twenty swarm-boxes are filled.

If you are quick and have good luck in finding queens, and work fast, you should have the twenty boxes of bees in five or six hours, or about 3 P.M.

Now take a laying queen and drop her right down in among the bees, one for every swarm-box. Give the queen-cage a little shake, and out she goes. It is better to buy your queens if you can get them; but if not, the queens already raised which you have on hand may be used.

Going to yard No. 2 we arrive by 4 P.M., taking the boxes of bees. Put them in the shade, and then arrange twenty hives. Set them where you want them to remain, and go to the supers of the old colonies, and take out four frames of honey and comb, selecting combs about half full of honey, and one sheet of foundation, putting the sheet of foundation next to the outside comb. When the hives are all set, and ready for the swarms, slip the slides of the swarm-boxes, and shake the bees in front of the hives (one box for each hive). It is just about sundown by the time you are busy shaking the bees out of the boxes in front of the hives and seeing that the bees go in.

The next morning go through the same process at yard No. 2 that you did at No. 1, taking the funnel and swarming-boxes and shaking the bees in till the twenty boxes are full. Drop in twenty laying queens, and return to yard No. 1, and fix the hives in the positions in which they are to remain. Take four sheets of honey, partly full, from the super of the old colony, and one sheet of foundation for each hive, putting the sheet of foundation next to the outside comb.

Now it is getting late, and we run the twenty swarms into our twenty hives the same as we did the evening before. We keep this up until we get all the supers of honey used up, or as much increase as we want.

The old colonies will stand a draw of a couple of sheets of bees again in seven or eight days, and possibly more. It all depends on the condition of the weather, and how fast the brood is hatching. One has to judge by the looks of things. Draw from the old colonies for the purpose of swarm prevention till the honey flow is on in earnest, and supply foundation for both the *old colonies* and the *new swarms*.

The third week the swarms are storing more honey than the old colonies that we drew from. Last year I started with 88 colonies in the sage district of California, having also 200 supers of combs from which the bees died the year before. I in-

creased to 210 colonies, and took 20,750 pounds of extracted honey.

St. David, Ariz.

PROPER PACKING AND GRADING

BY LOUIS SCHOLL

There is at present no other matter of so much importance to the Texas beekeeper, and the entire South, for that matter. There exist, at the present time, no definite rules that govern the packing and weight of the various packages of the honey of the South, as regards what might be termed a standard by which to go absolutely, both as to the manner in which the various sizes of cans and pails used shall be filled, and as to the weight of honey they should hold.

There seems to be quite a diversity of opinion among even our leading beekeepers; and as long as this continues we may expect trouble from time to time with the buyers of our products. While some claim we ought to let the weight include container with the contents in the selling weight, others furnish a full net-weight package. The latter seems far the better way, and one that can be easily arranged, and at the same time will be more in conformity with the present regulations of the pure-food laws. But if some of us are doing this, all should do likewise; for it makes quite a difference with a large crop whether we are compelled to furnish full net weight of honey as against those who include the containers as part of the weight.

Another most important item, and one that needs a lot of "clubbing," is that of packing dark off-grade honey in with fine white comb honey. Often such stuff is so far "off" that it is unfit to eat, and hence the practice should not be permitted to go on.

The matter of the proper amount of comb honey in proportion to extracted honey in packing "bulk comb honey" needs some adjustment before our next packing season rolls around. While some beekeepers, to be honest, put a large amount of comb honey in the cans, and less extracted, others vary these amounts to a great extent, and just as honestly. The trouble is, we have no real standard to go by, and such should be provided.

We have a great deal of trouble also when it comes to the prices of honey. There are quite a number of beekeepers who believe in keeping the price up in proportion to the supply and demand, and in relation to other commodity prices, so far as practicable. But this often—yea, very often indeed—works against them in the prompt dispos-

al of their products. This is because there is such a difference in the price at which various beekeepers sell their honey that the lower prices prevent others selling their honey.

A better organization of the beekeepers, or even a simple "getting together" and discussing these various questions, would bring about an improvement over the present-day situation.

New Braunfels, Texas.

A FURTHER NOTE OF WARNING AGAINST SPRAYING WHILE IN BLOOM

BY PROF. N. E. SHAW,
State Entomologist of Ohio.

The time of year is now at hand when the spraying campaign is started against the many pests affecting our fruit-trees. A word of caution should be given for the benefit of those who disregard the advice of authorities and spray their trees while in full bloom. There is nothing to gain by the application of spray at this time, but, on the other hand, positive injury is sure to result to the vital parts of the flower, and likewise to bees and other insects which are so necessary to the proper development of the fruit.

For a time the correctness of reports from correspondents (that many orchardists sprayed their trees while they were in full bloom) was doubted. During the past year reports of this kind were investigated by inspectors, and it was found that the practice was being followed to a considerable extent. A few of the offenders, strange to say, are some of our largest fruit-growers whose spraying equipment is not sufficient for their orchard acreage; and in order to spray all of their trees before the closing of the blossom end of the apple, they commence operations while the trees are in full bloom.

Another class of offenders is composed of those who do commercial spraying for small orchardists. Their object, of course, is to extend their work over as long a period as possible, and many of them spray right through the blooming period, regardless of the condition of the blossoms. Their employers are usually ignorant of the harm done by the practice, and make no stipulation as to the time during which the work must be performed.

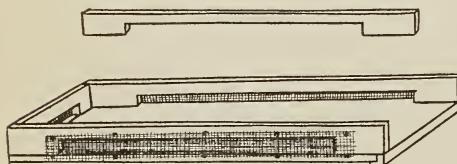
This Department will make every effort possible to discourage this harmful practice, and asks the co-operation of beekeepers in reporting all instances of this kind that come under their observation.

Ohio Department of Agriculture.

Heads of Grain from Different Fields

A Bottom-board that Does Away with SULKING BEES

I can not remember now whether it was Dr. Miller or Mr. Doolittle who advocated putting blocks under the hive in summer to give bottom ventilation. I am quite sure that it is Dr. Miller who uses the bottom-board with the deep space under the frames, with the idea of giving more ventilation than can be secured by means of the ordinary bottom-board. That two such successful beekeepers find it necessary to have more ventilation is pretty sure evidence that there is something lacking in the standard make of bottom-boards. In my own experience as a beekeeper I have found that, when using the regular make of bottom-boards, it is almost impossible to crowd the bees sufficiently to get results in comb honey without their sulking and hanging out on the front of the hive. Abundant bottom ventilation has always been in accordance with my idea, but I do not like the plan of the blocks very well for more reasons than one. The chief reason was that, when the hive was set on these blocks, it gave the bees an entrance from every side of the hive, and I can't say that I enjoy opening a hive when the bees in about every third hive are going to pile out and sting a row all around my ankles.



This bottom-board is made just like the ordinary reversible bottom-board, except that, instead of the deep entrance being only $\frac{1}{8}$ or one inch deep, mine is two inches deep. Then an opening is made on each side and at the back, one inch deep, extending each way to within three inches of the corner. This opening is covered with wire cloth, which compels the bees to go to the regular entrance, and keeps them away from my feet and legs. At the same time they have a free ventilation from all sides; and after using this bottom two years (last year on fifty colonies) I have yet to see a single colony hanging out over one of them. This certainly must have a decided influence on the swarming problem.

These bottoms are ideal for moving bees, for all you have to do is nail up the entrance tight, and the wire-cloth-covered holes will give abundant ventilation. Then, again, when wintering in the cellar the bottoms can be left on, and still there will be almost as free a ventilation as if there were no bottom at all. When the weather is too cool for the wide entrance the reverse side is just the same as the shallow entrance on the regular bottom-boards. The drawings will illustrate the construction.

Barryton, Mich.

LEON C. WHEELER.

A Modification of the Alexander Method of Increase

Will you be kind enough to state objections to the following modified plan of Alexander for increase and prevention of swarming? Select a strong colony with a quantity of brood in all stages of development, before the clover flow starts, or, preferably, about one month before the clover flow. Look through the colony carefully, and remove every queen-cell. Have a new hive ready with frames of foundation, but with one place left for a frame of brood. Place the new hive on a stand near the first, and then remove a nice frame of brood from the old

hive and place it in the center of the new hive. Find the queen, and introduce her into the new hive (if possible, select the frame on which the queen is found). Now remove the old hive to a new stand some distance away, and place the new hive on the old stand. A queen may now be introduced into the old hive; or would it be better to leave one queen-cell if one is present? Would the delay of 16 days, caused by raising a queen, be a serious handicap to the colony for handling the honeyflow?

Decatur, Ga.

H. B. ARBUCKLE.

[As many of our readers have, perhaps, forgotten the original Alexander plan, we are giving it here.—Ed.]

When your colonies are nearly full enough to swarm naturally, and you wish to divide them so as to make two from one, go to the colony you wish to divide; lift it from its stand and put in its place a hive containing frames of comb or foundation, the same as you would put the swarm in, providing it had just swarmed. Now remove the center comb from this new hive, and put in its place a frame of brood from the old hive, and be sure to find the queen and put her on this frame of brood in the new hive; also look it over very carefully to see that it contains no eggs nor larvae in any queen-cells. If it does, destroy them. Now put a queen-excluding honey-board on top of this new hive that contains the queen and frame of brood with their empty combs, then set the full queenless colony over the excluder; next put in the empty comb or frame of foundation taken from the new hive, and close the upper hive except the entrance they have through the excluder into the hive below. Leave them in this way about five days, then look over the combs carefully, and destroy any larvae you may find in the queen-cells unless they are of a good strain of bees that you care to breed from, for they frequently start the rearing of queens above the excluder very soon after their queen was placed below the excluder. If so, you had better separate them at once; but if they have not started any queen-cells above, then leave them together ten or eleven days, during which time the queen will get a fine lot of brood started in the lower hive, and every egg and particle of larva that was in the old hive on top will have matured, so it will be capped over and saved; then separate them, putting the old hive on a new stand. It will then be full of young bees mostly, and capped brood, and in about twenty-four hours they will accept a ripe cell, a virgin, or laying queen, as they will then realize that they are hopelessly queenless. I would advise you to give them a laying queen, as I never like to keep my full colonies for even a day longer without a laying queen than I can help.

In this way you secure two strong colonies from one, without losing a particle of brood or checking the laying of this queen; and with me it almost wholly prevents swarming. This is the way we have made our increase for several years, and we like it much better than any other method we ever tried. In doing so we keep all our colonies strong during the whole summer, and it is the strong colonies that count in giving us our surplus.

The mere fact of having a large number of colonies does not amount to much unless they are strong in bees and are well cared for at all times. This is a fact that many have sadly overlooked; and when the season comes to a close, giving them a small surplus, they feel disappointed and lay the fault on many things that have had but little to do with their failure.

[Your modification of the Alexander method of increase is not as good as the original Alexander plan, for this reason: You remove the old hive to the new stand at the time you make the division of the colony, while Mr. Alexander puts the old hive

over the new one with perforated zinc between. The object of this is to save the young brood that is unsealed. In five days, as Mr. Alexander directs, all the brood will have been sealed up, and quite a number of young bees will have hatched out. At that time the upper story with its young bees with nothing but sealed brood can be put on another stand much more safely than it can be done at the very beginning when there is unsealed brood and less of young bees.—ED.]

Feeding During a Time of Making Increase

Dr. C. C. Miller:—Please let me know whether the method of applying the Alexander feeder at the time of making increase, as per your article in GLEANINGS, May 1, 1912, p. 266, and feeding a pint of syrup every night for 14 nights, so that the increase will rush things for the basswood flow and buckwheat would apply to conditions similar to those given on p. 279, May 1, 1912. Do you approve of the use of the Alexander feed in cases of this kind, as the cost of syrup will be only about 30 cts. per colony? Will it pay to spend this much in the above cases?

Canastota, N. Y.

WM. P. FRITZ.

If I should feed in the way you suggest, I don't believe it would make enough difference to pay for the trouble, if, indeed, it would make any difference at all; for at the time the increase would be made the bees would be gathering enough and more than enough to supply the brood, and extra feeding would not increase the laying of the queen. There are, however, a few localities where it might pay well. There may be particular seasons in almost any locality where feeding would pay big. In the first half of June I expect my bees to be doing a land-office business if the crop is to amount to any thing that year; and it would be foolish for me to feed at that time. But one year there was a dearth in June, and before I realized the situation the bees were carrying out the white skins of larvae from which they had sucked the juices. I could well have afforded a dollar a pound for sugar to feed at that time. Now, suppose a locality where the weather is favorable during the time you would want increase, but there was nothing from which stores could be gathered, while a heavy flow might occur later on. In that case it would pay well to feed, so as not to have any break in brood-rearing.

The gist of the whole matter is this: If bees are already having all the brood they can cover, feeding will not increase it. If they are already gathering abundance of stores for brood-rearing, feeding will not hasten the building-up; but if bees are not gathering enough to keep up brood-rearing, then feeding may pay well.

Marengo, Ill.

C. C. MILLER.

Spring Uniting

In May of last year my bees were near the point of starvation; and as I did not see any prospect ahead for honey I united a part of my 55 colonies so that there were only 38. I intended to keep on uniting until I had only 25, as I did not want to have to feed so many; but about May 15 the colonies seemed to be so strong that I thought I would wait a few days and then unite more of them if I desired. About the 20th they began bringing in some honey, and they kept at work. Up to that time I had had three or four swarms. That is all I had that season. I stacked up supers, three or four to each colony, and when the season was over I found I had sold \$121 worth of comb honey near home, and I had besides 22 hive-bodies full, and many unfinished sections.

I will describe my way of uniting. If A and B are to be united, A being the stronger of the two, I lift A from its stand; set B in place of it; then

remove the cover from B, blow in a little smoke, and finally I smoke a little at the entrance of A. Then I loosen the bottom-board of A and set it on top of B. I do this when the bees are flying freely. If there is any choice in the queens, I kill the undesirable one; but if not, I let them alone. Sometimes the two remain together; but I have never known more than two instances when the queens lived together all winter.

Late in the fall the bees will usually be in the upper hive; and if the colony is not too strong I separate the two hives and give the best set of combs to the colony.

Fremont, Mo.

MRS. ALMEDA ELLIS.

Transferring without Drumming Bees

I notice in GLEANINGS for March 1, pages 154 and 155, illustrations of transferring which seem to me to be altogether out of date; for, in the first place, drumming out bees is quite an unnecessary waste of time. The quickest and easiest way of transferring is to turn the hive upside down, fasten a box in a slanting position over the bottom, of course having used your smoker first. Then with a hammer and hatchet split off the side that has fewest combs attached. Smoke back the bees; cut out the first comb; put the dry comb into one hive, and comb with honey into another; smoke the bees off the second comb, and repeat, cutting out any comb containing brood, and so on. By the time the last comb is out the bees will be in the top box, and the queen either found in cutting out combs or remaining in the old gum.

Having transferred hundreds of gums in this way, I have found it to be the quickest and easiest way. Before I fasten on the small box I note particularly how the combs are fastened to the gum, and choose the side having the fewer fastened to it; for the side to be opened, there would not, in nine cases out of ten, be a quarter of the flying and loose bees as there are shown in the illustration. Turned upside down, the combs are often found attached to the sides of the hives.

I don't say any thing about the crossway sticks, as they are very easily gotten rid of.

Alenville, Ala., March 10.

H. F. HART.

[An expert can transfer from a box hive quicker by the method described by our correspondent than by the process of first drumming the bees out of the hive. The average beginner, or, rather, the person who tries transferring from a box hive the *first time*, will succeed better—that is, he will have less fear of stings if he drums the bees out first. Years ago, when the writer was learning his A B C's he found it more practicable to transfer as described by Mr. Hart; but at that time we had bought some 25 or 30 box hives, and we transferred them all in two days.—ED.]

Giving Room Beneath Instead of on Top

When the bees need room in the spring, having been wintered in two 5½-inch bodies, would it not be a good plan to put the third one under the other two and allow the top one to become an extracting-super, when it could be thoroughly cleaned, as well as the frames, of all propolis, and repaired if necessary? In this way one half of the hive would be cleaned every year. The bees, I believe, would be inclined to store the honey above, and allow the brood-nest to be extended downward; and, furthermore, the loss of heat would not be so great with the empty body below as it would be if placed above the brood.

H. C. DUNN.

East McKeesport, Pa., March 19.

[The proposed plan of putting the third shallow brood-chamber under the other two is an excellent idea, especially at the beginning of the season. It is

better to give room at certain seasons of the year in this way than to put it at the top. The only objection to it is that there will be considerable brood reared in the top story; and, later on in the season, you would have to reverse the process by putting the empties on top and the perforated zinc between the brood-nest proper, whether there would be one brood section or two, and the extracting-super above.
—ED.]

Apigrams from the Southeast; Stop! Read! Remember!

Give all colonies and every comb a thorough examination this spring.

Notice (and make a note of) the condition of every brood-nest, and make a second examination with equal attention, in two or three weeks, so that every queen whose work is inferior may be replaced, for a poor queen means a profitless colony.

Remove all combs that contain more than a dozen or so drone-cells, and melt up for wax; for many unnecessary drones are a heavy tax on the profits.

Remove all combs that have dry mold in the wax. If you don't, the bees will, and they will put drone comb in its place. If you remove it first, you profit in two ways—you save it for wax and you save their labor, which labor consumes honey and bee life.

Permanent enthusiasm is maintained mainly by profits, and profits are secured mainly by hard work and head work suitably mixed; so if you wish to retain the joy of enthusiasm in your beekeeping, get busy on the mixture.

Get two kinds of wax-extractors in your apiary, if you have not already done so—a sun wax-extractor for scraps, and a wax-press of some good kind; for in warm regions it pays much better to melt all defective comb than to patch it, for wax is "quick money."

When you walk through your apiary, have seeing eyes and hearing ears; for by entrance appearances may the inward condition of your colonies be known, and much hard labor be saved thereby.

It is not the bees that buzz the loudest that make the most honey.

Good seasons come both singly and in flocks; ditto with poor ones; so if you get a succession of good crops don't felicitate yourself on your cleverness. The lean flock may be even now at your door, to tax your prudence and endurance to the limit.

Rejoice in the bountiful years, and let the bees teach you to lay by for the poor years, when you shall need to step softly over the graves of "blasted hopes."

Mt. Dora, Fla.

G. J. V.

The Capriciousness of Swarms

Hiving swarms was a difficult matter for us last summer. The bees seemed undecided as to what they wanted to do, and would come out, settle, and then either move to another place or do some other queer stunt. Only one swarm, the first, was reasonable in its actions. It settled on a thornbush. I bent the bush down, gave it a blow, and the bees crawled into their new hive as calmly as the animals walked into Noah's ark.

The next swarm settled on the top of a tall young maple. I climbed up a ladder and cut off the limb while the hired men caught it on a forked pole and let it down in front of the new hive. The bees went in. But after that our troubles began.

A fine big swarm came off when I was away from home. It settled all right, and then the hired men sat down to dinner, intending to hive it after dinner. But meanwhile it soared away through the sky, and was lost to sight, though to memory dear.

The next time a swarm came off I was at home; but I might as well have been away. It alighted on

a low walnut; but while I was putting the hive in position, there was a rumble of thunder. The bees became frightened, and fled back to their hive. Then if I had only had a queen-trap I could at least have saved the bees. They issued the next day with their queen, and took refuge in the tall timber, and were lost.

I keep bees for the purpose of pollinating my orchards, and to them, in part, I owe my immense crop of 8000 bushels of red juicy apples which I gathered last year.

New Wilmington, Pa. J. C. M. JOHNSTON.

Dropping a Swarm from a Tree into a Hive

I had a swarm cluster in the top of a large elm-tree. As I could not reach the limb I climbed the tree, and, with a cutter on the end of a long pole, cut off the branch and let it fall to the ground, bees and all, having placed the hive at about the place where I thought the bees would fall. The limb struck the ground within three feet of the hive, and the bees all ran in.

Long Neck Sta., L. I. E. GRISWOLD.

[This plan you mention would, undoubtedly, be a good expedient in the emergency you mention; but ordinarily, if it is possible to reach the limb it is a little safer to let it down with a light rope after it is cut off. If you missed your calculation as to where the limb would strike the ground so that you did not get the hive near enough; or if the limb struck any thing else on the way to the ground the bees would probably get away from you.—ED.]

An Easy Way to Fill Combs

Last spring I had to feed my bees, and desired to do so by giving them sugar-water in combs. I filled my fountain-syringe bag, and the thin stream directed at the cells caused hardly any drip. The air was driven from the cells, and had plenty of room to escape. It was far beyond the dipper method or the immersion way.

Iowa. J. GAUS.

[The plan described is perfectly feasible. While we have not tried it, we know that one can secure filled combs in the manner described, with a good deal less spatter and daub.—ED.]

Cells Filled with Pollen in Aspinwall Hive

I have tried two Aspinwall hives this season; but with my management they were not especially successful. There was no swarming, but I had some bulged sections, a few thin ones, and nearly a third of the sections next to the brood-chamber contained one or more cells of pollen. The queens also went above, and a number of sections contained brood. In our regular hives, pollen is never found, and brood is rare in comb-honey supers. These hives may work better under other conditions and management. I shall continue the trial, and hope for better results.

Fair Oaks, Cal.

E. L. SECHRIST.

416 Pounds from a 24-Year-old Colony

Our last exploit was to get 416 lbs. of honey from the only colony of bees we had, and then have the colony live 24 years in the same hive. The hive actually rotted away from the bees.

Galva, Ill., March 13. LLOYD Z. JONES.

\$17 Worth of Comb Honey from One Colony

With reference to keeping down increase and running for comb honey, I would say that I have one colony that produced \$17.20 worth of section honey, and cast one swarm.

Sunbury, Pa.

JOHN DAVIS.

Our Homes

A. I. ROOT

Behold the fowls of the air; for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they? Which of you by taking thought can add one cubit unto his stature? And why take ye thought for raiment? Consider the lilies of the field, how they grow: they toil not, neither do they spin; and yet I say unto you that even Solomon in all his glory was not arrayed like one of these. Wherefore, if God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, shall he not much more clothe you, O ye of little faith? Therefore take no thought saying, What shall we eat? or, What shall we drink? or, Where-withal shall we be clothed? For after all these things do the Gentiles seek; for your heavenly Father knoweth that ye have need of all these things.—
MATTHEW 6:26-32.

Mrs. Root and I have now been here in our Florida home close on to six months. Neither of us has had a sick day, and I myself have scarcely had a pain or ache. Neither of us has had any thing worth mentioning in the way of a cold, and nothing at all like grip that has again been so prevalent throughout the cold North. Other winters we have had more or less of cold and grip, and similar troubles along that line. Now, then, can I give any of you any suggestions in the way of *getting well and keeping well*—especially in the winter time or in cold damp weather? T. B. Terry has lately been having a good deal to say in regard to having open airy rooms, and getting oneself *hardened* or acclimated to cool weather without being excessively bundled up. Mrs. Root has also been for years past urging that I should get rid of my fur cap and the unusual amount of clothing that I felt that I must wear in order to avoid “taking cold.” She has over and over again urged that, if I would take proper care and precautions, I could get tough so that I could stand a little exposure without having neuralgia, rheumatic pains and aches, and things of that sort. Well, early in November I began getting rid of my fur cap, endeavoring to keep warm by vigorous exercise in the open air without so much clothing. In place of wearing an overcoat when it was cold, by Ernest’s advice I got me a woolen sweater that could be easily thrown off or put on as circumstances or the weather seemed to demand; and right here I want to say that that woolen sweater has been one of the greatest helps and comforts of any thing I ever got hold of. Well, now, let us go back a little.

The first time I took off my coat and went to work in my shirtsleeves, even down here in Florida, the consequence was a stiff neck. Most of you know what that is with-

out my explaining. I began to say that I couldn’t stand it—that I was too old, and that my circulation was too poor; but Mrs. Root urged that, if I would keep trying, pretty soon I would get toughened to it so I could get along without a coat or without a sweater. Well, the next day I tried taking off my coat again; but, as before, the consequence was a stiff neck, but I was obliged to admit that it wasn’t quite as bad as the day before. The third day there was very little of it; and after that the stiff neck disappeared entirely. I went on with my experiments along that line, and not only discarded my coat, but after a time my vest, then put on lighter union underwear than I had been in the habit of using, and finally I went out and worked hour after hour with my coat and vest off and my sleeves rolled up, my underwear turned back, and not only my neck but my chest exposed to the sun and air and the weather. I also laid off my woolen stockings, and put on gradually some of the thinnest cotton; and of late, during February and March, I have been going barefooted through the middle of the day; and, to tell the truth, while I dictate this to the dictaphone I am sitting down here barefooted, bareheaded, with my collar turned back just as I have been describing. The fact that I could get along and be comfortable and happy with so little clothing has really given me a new lease of life. I enjoy my work and my meals, and I enjoy reading my books and papers after I have been out working in the ground or out with the ducks and the chickens. I firmly believe that we as a people have been wearing more heavy clothing, both men and women, than God intended we should. Aye, further, I am satisfied that many of us might live many years longer, and in more comfort, if we could only convince ourselves that it is possible to wear *less clothing*, and clothing that permits the air to circulate all over our bodies. I believe history tells us that in one of the islands in the seas they discovered a race of people that went entirely naked; but when these people were civilized and Christianized, and taught to wear clothing like other people, the race gradually lost in vitality, and threatened to become extinct unless they could be allowed to go back to their old ways and habits of being out in the open air with scarcely a rag of clothing to protect them or to look decent and civilized. Furthermore, it has lately been discovered that roop and a host

of other diseases that afflict chickens come about just because they are shut up too close and do not have enough air. "Killed with kindness" expresses it exactly. I am inclined to think that many human beings, the precious little babies included, *have* been killed with too much kindness and too much care to protect them from this beautiful, bright, invigorating outdoor air. In saying this, however, I do not want it to be understood that I mean to ignore the effects of draft or sudden exposure to weather without proper protection. I can't understand why it is myself; but I know this—that, if I sit down inside of the house with the doors and windows all open, there is danger of a draft that may give me a cold; whereas if I were to go right out in the open air, right in the very breeze that seemed to hurt me before, the wind causes little or no inconvenience. There is something peculiar about the draft of air that comes in and out through openings, such as doors and windows.

I read of a hunter who said that, while he was out camping in the woods, he was perfectly well—hadn't an ache or pain, no touch of rheumatism nor any thing of that sort. When he got back to civilization, and slept in the house, his old troubles all came back. Why is it?

Let me now go back to the matter of clothing. For years past—in fact, I can hardly remember the time when I didn't wear a starched shirt with white bosom and starched collar to match. I think that, while up in the "cabin in the woods," in Northern Michigan, I did for a time adopt what they called then a calico shirt. Late years it has been that starched front, so impervious to wear winter and summer—as long, in fact, as I can remember. During the past winter, however, I have ceased patronizing the laundry. Our oldest daughter paid us a visit, and she and Mrs. Root decided that it was too bad that I should go up town looking as I did, and they finally found some light summer shirts, so very thin that I scarcely knew I had any on at all, and which made me look a little more decent and like other people. And, besides, if I find this obstructing the air and breeze and sun too much I can unbutton it and throw it back without very much trouble. One of the most beautiful pieces of modern statuary I ever saw in my life—at least one that I have looked at and admired as much as or more than any other—is in our Medina cemetery. It pictures one of the old pioneer wood-choppers who cut down the great trees in Ohio, and established homes and colonies. This wood-chopper stands on a log, ax in one hand, with his hat off and

head thrown back, collar unbuttoned and turned back so that he exposes fully to view the muscles of his neck and chest. This athletic wood-chopper is in the full prime of life, and I should say from the looks of the picture that he is also enjoying such a life as God intended he should have out in the open woods, and taking the best exercise that every one of God's children should take to enjoy fully the gift of a human life to live. Before sitting down to my dictaphone I had been out in the lot with my colored man, Wesley, spading up the mellow sandy soil in order to make place for more of that five bushels of dash-eens that I have told you about. Of course I perspired freely; and after working an hour or two I enjoyed a good drink of water more than I can tell you. During the past winter, especially along toward spring, there has been more complaint around here of the "redbug" than usual, and I myself have had some of the "biggest doses" of "redbug poison," I think, that I ever had before since I have been wintering in Florida. Well, one day I asked Wesley if the redbug didn't trouble him. His reply was, "Mr. Root, the redbug never troubled anybody—at least, they don't trouble anybody very much when he sweats profusely. The sweating drowns them out." Since I have been helping Wesley spade up the ground so as to get into a brisk profuse perspiration the redbug poison seems to have let up almost completely. "By the sweat of thy brow shalt thou eat thy bread." The women-folks of our land seem to have caught on to what I am suggesting pretty well, to the full; but if I understand it, it is because of the fashion and not because it gives them health, strength, or vigor. Well, I am very glad to see them get along with lighter and thinner clothing, and clothing of less weight; but it keeps occurring to me that, since this new style of dress was adopted, if it were worn more at home instead of out on the streets it might be better, all things considered, especially for the growing boys and men who do not always look on women in the new attire as they would have *all men* look at their own wives, sisters, and mothers. If I am correct, Terry says that he wears no underclothing except when he goes away from home. When we are outdoors in the field in the tropic or semi-tropic climate I would let the underclothing be pretty much *all* the clothing that is worn. When we go to town, of course we ought to get fixed up a little more decent and a little more presentable. When we go to church on God's holy sabbath, of course we want to look at least respectable. Even *then* I do not believe, however, that

it is incumbent on us to wear the old style of stiff starched shirt fronts. In our present church we have a Bible class of elderly people who sometimes number as many as fifty or sixty. Last Sunday I took pains to notice, and scarcely a man wore a shirt with a stiff starched front.

Now I want to say a word along the same line in regard to the care of the feet. For years I have been troubled with corns, and it has taken a great amount of my time to apply corn remedies, or to provide myself with a keen sharp knife and cut away the troublesome accumulation; and especially during hot weather my feet get hot and uncomfortable. Last summer I told Mrs. Root that I should have to go barefooted or wear some very light women's cloth shoes. But she vigorously objects to this, especially when genteel people want to see A. I. Root; and, by the way, that reminds me that one day down in Florida when I had discarded my shirt, cap, and every thing but my light union underwear and pants, I was out barefooted hoeing my potatoes, when a whole load of ladies and gentlemen who took or read GLEANINGS called to see me. These were people of wealth and culture. When I undertook to apologize, the leader of the party said that was just the way he did at home himself; and I found out afterward that he was a man of large means. Well, when Mrs. Root scolded about my going barefooted, even in the presence of company, I tried at the shoestores in Bradenton to get some of the thin-cloth ladies' shoes. Among the dealers one who came from the North explained that there was no call for any thing of that kind in the South; and when I told him about the troubles with my feet he brought out some Florida shoes. A pair of these shoes are now on my feet as I dictate these lines. There are 21 oblong openings in the upper part of the shoe. In fact, one can look right through the shoe and see the stocking feet. Some of the openings come right above where my most troublesome corns used to be located. Let me digress a little.

Years ago one of my feet became so sore that I was pretty nearly crippled. I went to our family doctor; he said the trouble arose from a *lack of ventilation*. He told me to get an old shoe, and cut some slits through the upper part so as to let plenty of air get in clear around the sore spot, and then Nature would perform a cure without any drugs or medicines; and I used to go to church with that same mutilated shoe. Well, these shoes I found in Florida were made that way, and the openings I have mentioned are disposed so as to be ornamental rather than otherwise. I do not

know whether this sort of shoe is for sale here in the North or not; but it certainly ought to be in hot weather.

Let us now consider our text, or string of texts, a little in closing. The dear Savior exhorted us to beware of thinking too much about what we should "put on;" and I am sure he would not approve for one moment the expensive clothing that is now worn by both men and women who *think* they can afford it. I am not posted in regard to women's dress; but I am told that single garments frequently cost more than a hundred dollars. On our trip home a lady who sat next to us told about a woman in Florida who paid \$600 a week for board and lodging—almost \$100 a day. Her attire was after the same fashion. Our text admonishes us in these words:

"Why take ye thought for raiment?" And, again, "If God so clothe the grass of the field . . . shall he not much more clothe you, O ye of little faith?" We as a people have not only been "overfed," as Terry tells us, but we have many of us been *overclothed*. In fact, I have been overclothed; and until the present time I scarcely knew it. As nearly as I can gather from the Bible, among Oriental peoples in ancient times the clothing not only cost but little, but it gave access to an abundance of air over every part of the body; and not only air but sunshine as well.

I forgot to mention in the proper place that, when I let the Florida sun strike directly on my bare neck, shoulders, and breast, I at first got sunburnt; but in a little time my flesh got tanned and hardened, and it was just delicious to feel the sun and air where I had been having neuralgic pains. Many times when we had cold nights I found it necessary to put on my sweater, and bundle up pretty well. But I would often get busy and forget to dispense with this extra clothing when it was no longer needed. Then I would begin to have my old feelings of lassitude and bad circulation, accompanied with a lack of energy and enthusiasm; but when I got rid of the heavy clothing, and got hold of my hoe and went out in the garden, I felt a new lease of life. I was ready to sing praises, and give an old-fashioned Methodist shout over my "showers of blessings." At my age, when I begin to feel chilly toward sundown, or when the weather changes, of course the proper thing to do is to hunt up the discarded garments until I feel comfortable. The shoes I have mentioned, which I call my "cornerib" shoes, have very thick soles. This keeps the feet dry. Of course you must not get into the mud and water with such shoes, for that would soon result in

wet feet; but the soles are so thick that the feet are kept pretty well up out of the wet. Here is another point:

As we grow older we find our strength failing. Even a fair-sized Bible I sometimes feel to be quite a burden when I have to walk any distance. Well, now, many old people will find it a relief to get rid of every pound of clothing that can be dispensed with—yes, I might say every ounce. When I am going to take a considerable walk, I take my heaviest pocketknife out of my pocket; and if I have any silver dollars I lay them aside—at least as many of them as I shall not need. Young people, full of muscle and strength, may not need these suggestions. There is a beautiful text which I feel will come in well here:

Let us lay aside every weight, and the sin which doth so easily beset us, and let us run with patience the race that is set before us.—HEB. 12:1.

I do not know much about the raiment the Savior wore; but from the pictures and other suggestions we gather, I conclude it was very simple, light in weight, not ex-

pensive, and gave him the full benefit of the air and sun, as I have mentioned. Just one word more about starched clothing:

It is certainly the wrong thing for me; and I hope to see the time when the fashion of making the clothing with starching and ironing will go out of fashion. With the attention that is now being given to this matter of health, there certainly ought to be a reform in clothing as well as in the food we eat. I am sure a style of raiment can be devised so that both men and women may look neat and tidy, and at the same time get the full benefit of both sun and air in the way I have described, especially in hot weather. May God help us to break away from foolish fashions when those same fashions interfere with our securing the best and most robust health. Therefore “take no thought, saying, What shall we eat? or, Wherewithal shall we be clothed? . . . But seek ye first the kingdom of God and his righteousness, and all these things shall be added unto you.”

Poultry Department

TREADING IN THE FOOTSTEPS WHERE GOD HAS TROD.

Some scientist has said he greatly enjoyed treading in the footsteps where God has trod, or thinking God's thoughts over after him, or something to that effect. If I have not got it exactly right, will some one please straighten me out? Well, lately I have greatly enjoyed treading in the footsteps where God has trod. Let me explain:

I told you last fall that I had prepared to have an electric incubator to run during the winter down here in Florida. Well, when I got here I found they hadn't got ready to give us a current for the whole twenty-four hours. They thought, however, that by the first of January they would be all ready; then it was put off until the first of February. Well, just a little before the first of February we had some cold, rainy, and dark days. The demand for light all day was so much that they finally put it on without giving me notice, as they had promised. When I found out that the current was on I hurried up and fixed the incubator. In order to get eggs enough, I put in part of them one day and part another. I know incubator manufacturers have, almost without exception, declared against such a course. I thought that, under the circumstances, I would risk doing so once more; but just mark right here—I am never going to try any more experi-

ments of *that* kind. They should all go in at the very same hour, and the temperature shall be kept right up from the start to 103 as nearly as I can make it. I want the incubator warmed up and adjusted before the eggs are put in, and then, as I have said, every egg shall go in at just such an hour. The reason is this: I want the chickens all hatched out at one time. If some of them are dragging twenty-four hours or more, there is sure to be trouble—at least that is my experience.

Well, every thing went along all right until the eggs began to pip, and one Sunday morning I got a telephone notice that the current would be cut off (in about an hour) all day Sunday. Had they given me notice long enough beforehand, so I could have lighted the lamp and warmed up my Buckeye incubator I wouldn't have cared so much about it; but just imagine the condition—chickens already beginning to pip the shell, the incubator perfectly cold, and a pretty cool morning at that, and on *Sunday* morning. I lighted my lamp and did every thing I could to warm up the Buckeye incubator quickly; but by the time I got it up to 95 the electric incubator was also just 95, and going down rapidly. The Buckeye, however, got up to 100, and the electric was down to 90, and I decided to make the change. Now, you know every incubator manufacturer, at least nearly all

of them, declare that the incubator *must not* be opened nor the eggs disturbed after they begin to hatch. Another thing, my electric incubator had 60 fertile eggs in it (I have explained before how I manage to keep my incubator full of fertile eggs), and the Buckeye held only 50. What should I do with the extra ten? Let me digress a little.

I have been all winter wanting some sitting hens; but my cross between Buttercups and white Leghorns have never offered to sit. I don't think I even heard a clucking hen until the first of February. Well, about January 1 I asked neighbor Rood if he didn't have a sitting hen he could spare me. He said he had two or three, and I was quite welcome to them. They were Rhode Island Red pullets; but he said he didn't believe I could make them sit after they were removed from their home across the way to our place. It turned out just as he said. I purchased at \$1.00 each three of these great big beautiful pullets that wanted to sit. He said he guessed 75 cents would be about the right price, but I remonstrated. I told him I couldn't think of taking his young pullets, just commencing to lay, at less than \$1.00. Well, true enough, when I got them over to my place, in spite of all the care I could take, not one of the three would sit. He said I might bring them back; but I told him they would want to sit again pretty soon, and so I preferred to keep them. Well, in about a week one after another began to lay, and gave us a goodly number of eggs; some of them every day, and some of them two eggs out of three days, until about the middle of February. Well, one of those Rhode Island Reds (a great big healthy motherly-looking hen) that very Sunday morning, just a little before brother Rood came over, this big fluffy hen was around "clucking." Just as I began to wonder what I should do with the extra eggs that wouldn't go in any kind of shape in the Buckeye incubator, I remembered this clucking Rhode Island Red; and on going over to the poultry-house, sure enough she was on her nest, and fighting furiously when I attempted to interfere with her. So I just took fifteen of those eggs that were ready to hatch and put them under her. I have so frequently taken eggs from sitting hens and put them in the incubator, and *vice versa*, that I didn't anticipate any trouble; and there wasn't any trouble here so far as the hen was concerned. The only trouble was this: She seemed to know (or God had told her) that, when she commenced to sit, the eggs should be rolled and turned; and not knowing, evidently, that these eggs were almost ready

to hatch, she kept on rolling and turning them when they should not have been rolled or turned at all. You know all of the incubator-makers say that we should stop turning the eggs on the eighteenth day. In times past, because I couldn't see any particular need of this, I had kept on turning them. You may know the result. Many of the eggs began to hatch when the opening the chick made was on the under side, and the liquid inside of the egg ran down and closed it up, and the chick suffocated. And now a great and wonderful truth began dawning upon my mind. The reason the manufacturers of incubators say we must not turn the eggs after the eighteenth day is because the sitting hen, after about the eighteenth day, entirely ceases from rolling and turning the eggs, and leaves them quiet the same side up until they hatch out. I ought to have remembered this, because once in times past I took some duck eggs that were nearly ready to hatch and put them under a hen that had been sitting only about a week. The consequence was, she rolled and tumbled those poor little ducklings when they were just getting their noses out of the shells until she killed nearly all of them.

Well, these three Rhode Island Red pullets have given me faith in the Rhode Island Reds. Before, I had never fancied them very much; but the sight of this hen that was clucking around preparing to sit Sunday morning, and had some chicks hatching out just twenty-four hours later, gave me faith. After this, when she took the chickens just hatched out in the incubator as soon as they could be safely removed without any objection, it gave me still more faith in the Rhode Island Reds. A cold rainy spell came on, perhaps the coldest we have had in Florida this winter, just about the time of my incubator trouble. Of the forty-eight that hatched, out of the forty-nine eggs that I have already told you about, there are something like half a dozen that might have died had it not been for this motherly sitting hen that was so perfectly willing to take any thing and brood it under her capacious wings, without any objection whatever. Let me explain.

We had two or three inches of rain during twenty-four or (possibly) forty-eight hours, during the middle of February. This is very unusual here in Florida, and almost unprecedented. Well, as all of my poultry-houses had prefectly dry sand inside on the floor, I hadn't as yet paid much attention to drainage. However, such a flood of water wet the floors of not only nearly all of my poultry-houses, but there

was quite a puddle of water in the brooder-house, right close up to the fireless brooder. They stood it pretty well until morning, when the strong and healthy ones were outside on a run, and the weaker ones had no *warm* place to stay. This is one of the troubles with the fireless brooder. The big motherly hen, in addition to about thirty chicks of her own, spread her big wings and feathers, and mothered every one of these that found it hard to keep warm in the fireless brooder. I tell you, a good motherly sitting hen that won't quarrel with her chickens, no matter whether they are white, black, or yellow, is a good thing to have. I feel just now like saying that the best brooder in the whole world (especially for the poultry-keeper who keeps chickens on only a small scale) is a good motherly sitting hen. When a chick that is not as strong as the rest begins to feel the need of warming up, the great natural brooder (the brooder that God made) is ready to welcome the poor little sufferer and warm up his back and ears and toes. Underneath her warm fluffy feathers he can stick out his little head and rejoice, and thank God for the haven of rest when it is so sorely needed. Yes, for it is a rest and a "refuge" indeed.

Another thing in favor of this kind of brooder is that chickens hatched in an incubator have to be not only taught to drink but they have to be taught to eat. Several times I have found it quite a little trouble to get brooder-hatched chicks to eat bread and milk. When the bread and milk was set down before them, they only looked at it and smelled of it; but after a motherly hen had taken a mouthful in her bill and held it out to them with the accompanying assurance of her voice, the chicks all gathered around, and the most greedy took it from her lips (?) and then when she picked up some more and offered it to them the same way, they began to catch on and began looking for something on the ground, or on the little wooden trough or dish used for their regular food. After she has had the little chicks for a week or ten days, *then* the fireless brooder is all right, especially if you are down here in Florida. The temperature, the coldest we have had this winter so far, is just an even 40 degrees here on our place.

SOMETHING ABOUT INDIAN RUNNER DUCKS.

Ever so many inquiries have come in regarding Indian Runner ducks and rearing ducklings. The most of these are answered in an article already sent in. Just now somebody wants to know what *kind* of Indian Runners I would recommend of the

three that are advertised and talked about. Now, perhaps I am not competent to answer such questions. This is what I think about it. I don't think it makes a bit of difference whether the ducks are black or white or yellow. It does, however, make a little difference in regard to the color of the *eggs*. It is an easy matter to select ducks that will lay white eggs from any of these three different kinds. Somebody recently asked the editor of the *Rural New Yorker* if, in his opinion, the chickens that cost so much money at the chicken shows would lay any more eggs than other chickens. The good editor, or one of his correspondents, said that, so far as they could learn, it made very little if any difference at all. Poultry shows and the great crowds that gathered there were simply to show chickens that are good to *look* at. Now, friends, especially those of you who are beekeepers, you well know how many years and how much time and money were wasted in growing *bees* that "looked good." When we found bees that were handsome to look at, and were lighter colored than any we had had before, everybody was wanting them; but when we got right down to the facts of the case I discovered (and I think perhaps hundreds of others did) that the good-looking bees, as a rule, did not gather as much honey as some that were not so handsome. Leather-colored Italians, or the hybrids, gave the honey. In almost every neighborhood just now you will find somebody who has been foolish enough (I think that is the right kind of word) to pay \$1.00 apiece for eggs of chickens or ducks, and even more than that, when these high-priced eggs won't produce chickens that are any more valuable for eggs or for table use than those that can be bought at the ordinary price. The question is, what are you after—beauty or utility? If you want to do something for the world about the high cost of living, you don't want to pay 25 or 50 cents or \$1.00 apiece for day-old chickens. Without question, if you want to pay \$5.00 (or perhaps more) for a rooster that has been reared from a hen that has produced *pullets* that give a high record on eggs, it is good sense and real science. In this way you might also pay several dollars for a *pullet* from such a mother.

COUNTING CHICKENS "AFTER" THEY ARE HATCHED.

Our readers will remember that I have said a good deal about fireless brooders here in our Florida climate, saying no artificial heat is needed, even when you take chicks right out of the hot incubator and put them immediately into the fireless

brooder out in the open air. But in the past ten days I have had an experience that has made me think I ought to take back some things I have said. Right during the last week or two of the month of February we have been having a great lot of rain—very much such continued rains as we have here along in the summer; but although I have taken three hatches out of the incubator this winter, and lost scarcely a chicken, when my forty-eight had to take their first two weeks during this rainy season, there was, I shall have to admit, a *need* of some kind of heat, either artificial or natural. It rained so hard, in fact, that the whole ground was flooded. Every poultry-house on the premises, including the brooder-house, had a puddle, more or less, on the floor. We put ditches around the outside, but the ditches seemed inadequate, for we hadn't fall sufficient to take it away. The chickens stood up bravely for two or three days, then there began to be drooping wings and evident signs of a lack of warmth. I suppose I might have used hot bricks or jugs of hot water; but this was considerable trouble; and I supposed, naturally, that the sun would be out in a little while, and that they would fetch up. The consequence is that I lost six or eight out of that nice hatch of forty-eight chicks from forty-nine eggs.

A week later the big fluffy Rhode Island Red sitting hen was given from another incubator twenty-eight chicks. The floor of her house was a little better drained than the other houses. The drain tiles were laid right under her, and underdrained down to a depth of about 20 or 24 inches, so the ground was comparatively free from dampness—that is, compared with the other houses. Well, this big motherly hen, when her chicks felt chilly or out of sorts, and made that peculiar peep, instantly sat down and invited them under her capacious wings. When we had the coldest night, so that one night there was just a little trace of frost on the roofs of buildings, she kept the whole twenty-eight quite comfortable. During the day she brooded them more or less at intervals, so that no chick felt any inconvenience from getting "cold feet" and feeling chilly. The trouble with the fireless brooder is, in the morning, after strong sturdy chicks have gone out to forage in the open, the feeble ones that are unable to follow them can't get up sufficient heat themselves without their comrades, unless there is some kind of heat like the mother hen, or perhaps artificial heat, and are bound to suffer almost in spite of us. Now, I believe I would rather have a great big

Rhode Island Red hen, or a large fluffy hen of some other kind, in place of any kind of brooder, fireless or with a lamp. Where chickens are raised by hundreds of thousands, of course we have to resort to artificial heat. But, as I have proved several times, one of these big motherly hens will take care of fifty and even seventy-five chickens very comfortably—that is, during such weather as we have here in Florida.

ANOTHER BIG DISCOVERY.

My ducklings are now eight weeks old, and it is quite desirable that they should have a wider range; but there are several reasons why I can't give them this wide range without building more expensive fences. You see the ducks are easily fenced with a two-foot netting, which you can easily step over. The chickens have to have about a four-foot fence which can not be easily stepped over. If we go through into their yard, or out of it, we have got to have gates. Now, I didn't want any more gates or fences, but I did want my ducklings to get through a yard where there were some half-grown chickens, and get a wider range and down to the water. Was it possible to make any opening through the fence that would allow the ducks to pass back and forth freely, and wouldn't admit the chickens? As the ducks and chickens were of about the same size, you would naturally say you don't see how it could be managed. Well, now, just listen. Right close to the dividing fence between the ducks and chickens was one of our underdrains to carry off the water. We dug a hole under the fence and then allowed the water from the underdrain to run over and fill this cavity. The cavity was deep enough so that, although the ducks went in and out without a bit of trouble, not a chicken dared to venture to go down into that mud-hole to get under the fence. Thus you see we had it. The ducks go back and forth as often as they please, but not a chick dares venture through to follow them to get into their yard and eat up their feed and jump over their two-foot fence. Do you say that this mud-hole under the fence will soon get to be very foul? Not so, for we have arranged so that water from the underdrain that goes in at this little pond comes out at the other side and keeps the water constantly changing. As the underdrain didn't carry sufficient water to keep things tidy and sanitary, we carried it up further on to higher ground, so as to get it down where we have a steady stream of running water.*

* About a year ago I told how we make an "artificial spring" by running tiles almost on a level up sloping ground, thus draining the land and getting running water at the same time.

Thus the ducks are not only watered, but they have water to wash off and swim in, and at the same time they have an open gateway where they pass at pleasure, but not a *chicken* can follow.

Later.—Since the above was dictated, the chickens learned, after all, to wade in pretty deep water; but the ducks had also learned the trick of diving, and we have lowered the fence until it almost touches the water; this, while quite agreeable to the ducks, proves a "dead open and shut" on the chickens.

GREASING THE ROOSTS, FLOORS, ETC., TO KEEP OUT VERMIN.

O. W. Mapes, "the hen man," says in *American Poultry World* that if roost poles are saturated with hot tallow, and the places also where roosts are attached to the building, no lice or mites will ever get on the fowls. Where wood floors are used, say in a brooder house, saturate the floor also with tallow or other cheap grease. Of course, kerosene will do it; but it must be soon renewed, while the hot tallow penetrates the wood and stands for years. Mapes should know about this after his years of experience. Here is what the *Farm and Fireside* has to say in regard to the matter:

BESTING THE MITES AT LAST.

The fight of generations of poultrymen against external poultry parasites seems about to be won, if the claims of "Mapes, the hen man," prove to be borne out. Mr. O. W. Mapes is a poultryman of many years' experience, whose operations have been conducted on a considerable scale and with a good degree of success. His unique ideas for housing and handling poultry have become known to poultrymen in many sections of the country, and for that reason his recent utterances on the complete control of external poultry parasites deserve to have full and fair consideration.

Mr. Mapes now affirms that the long-continued fussing and fighting to keep poultry free from blood-sucking insects is needless. The only treatment necessary is to paint the perches once a year with beef or mutton tallow, covering top, bottom, sides, ends, and roost supports with the melted tallow, leaving no space, crack, or crevice untreated. This is absolutely all that is required to win the fight except to compel every bird to roost on the greased perches. Simple! Easy? Yes. The mite or other brood-sucker that gets a smear of grease gets a dose that ends his career.

We have contended against these minute foes that cause an aggregate loss of millions of dollars annually to the poultry industry long enough. Is Mr. Mapes to be the deliverer?

"EGG SECRETS."

The *Farm Journal* people not only have a knack of getting out the most attractive-looking poultry books, but their books are "chock full" of valuable information and the finest pictures the world can produce. These books, at the low price of 25 cts., ought to be a rebuke to the authors of some

of the cheaply gotten up "chicken books" advertised in the poultry journals. I am pleased to see the book endorses my plan of placing the eggs on the small end for the first three days in the incubator, or until the unfertilized can be tested out to make more room. Now, if this egg-farm of 20,000 laying hens were conducted solely for supplying fresh eggs for table use, there could be no ground for supposing the beautiful book was in any sense an advertisement of their business. We learn, however, on several pages, that "day-old chicks" and eggs for hatching is at least *now* (like the Corn-ing egg-farm) a considerable part of their business. Notwithstanding, I think you want this book. See outside cover page of March 15th GLEANINGS.

MILLENNIUM COMING.

When our great railways begin teaching Christianity (and perhaps to *church members*), are we not justified in believing the millennium is "on the way," at least? Read the following, which I clip from that excellent little Sunday-school paper called *Forward*, from the Presbyterian church:

THE CLAIM AGENT'S LETTER.

One of the largest railroads in America has a general claim agent who believes in the Golden Rule. He sent a New Year's letter, last year, to every staff officer in his department, and every claim agent employed by the whole big railroad system. This letter embodied a code of ethics, so to speak, for the guidance of his department in its dealings with the public, and it is worth reading and thinking about. Some of its paragraphs are as follows:

"Be polite and kind to the poor. Remember that many an honest heart beats beneath the ragged coat, and a kind word during life is worth the best sermon ever preached after death.

"Do not be deceitful. Tell the truth and take your medicine; it is better for your conscience, the company, and your fellow-men.

"Do not be a colossal knocker. Life is but a flash at best. We should help instead of knock.

"Be honest. Because a claimant is poor, do not take advantage of him nor of his condition. Fate may lead you his way some day.

"Be frank in all things. If a claimant asks your advice, give it openly and freely. If your advice is not taken, your duty has still been done.

"Be courteous. In dealing with the public, do not endeavor to create the impression that you own the road. Remember that the railroad is but the servant of the people.

"Be ever patient. Patience is a virtue which few men possess. If a claimant vilifies you and says all manner of things against you, treat him with all the politeness and kindness you possess; and ere the day has passed he will bemoan the fact that he has made an ass of himself."

Good Christian rules these, as well as good business counsel. In reading them, it may be interesting to remember that the claim agent of a railroad has not a very easy job. All sorts of claimants, many of them unreasonable, attack him daily.

Now will some one tell us the name of the "great railroad" sending out the above?